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Oceans and the law of the sea

Report on the work of the United Nations Open-ended Informal Consultative Process established by the General Assembly in its resolution 54/33 in order to facilitate the annual review by the Assembly of developments in ocean affairs at its second meeting

Letter dated 22 June 2001 from the Co-Chairpersons of the Consultative Process addressed to the President of the General Assembly

Pursuant to General Assembly resolution 54/33 of 24 November 1999, you reappointed us as the Co-Chairpersons of the Open-ended Informal Consultative Process on ocean affairs established to facilitate the review by the General Assembly, in an effective and constructive manner, of developments in ocean affairs by considering the report of the Secretary-General on oceans and the law of the sea and by suggesting particular issues to be considered by the General Assembly, with an emphasis on identifying areas where coordination and cooperation at the intergovernmental and inter-agency levels should be enhanced.

We now have the honour to submit to you the attached report on the work of the Consultative Process at its second meeting, which was held at United Nations Headquarters from 7 to 11 May 2001.

The Consultative Process has suggested a number of issues for consideration by the General Assembly and, in accordance with paragraph 3 (h) of resolution 54/33 and bearing in mind General Assembly resolutions 55/7 and 55/8 of 30 October 2000, has proposed a number of elements for the consideration of the General Assembly in relation to its resolutions under the agenda item entitled "Oceans and the law of the sea".

* A/56/50.

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These elements are, of course, not intended as an exhaustive list of material relevant to the General Assembly's consideration of the item "Oceans and the law of the sea".

In the light of the terms in which the General Assembly referred to the Consultative Process in its resolution 55/7, this year the Consultative Process has been referred to as the "United Nations Open-ended Informal Consultative Process established by the General Assembly in its resolution 54/33 in order to facilitate the annual review by the Assembly of developments in ocean affairs". Some delegations wished, in addition, to stress the link between the Consultative Process and item 42 of the preliminary list of items to be included in the provisional agenda of the fifty-sixth session of the General Assembly: "Oceans and the law of the sea". Some other delegations did not share this view. Nevertheless, it was noted that the General Assembly, in establishing the Consultative Process, in its resolution 54/33, had recalled that the United Nations Convention on the Law of the Sea set out the legal framework within which all activities in the oceans and seas must be carried out, and with which those activities should be consistent, as recognized also by the United Nations Conference on Environment and Development in chapter 17 of Agenda 21, and had also recognized the importance of maintaining the integrity of the Convention.

(*Signed*) Tuiloma Neroni **Slade** and Alan **Simcock**
Co-Chairpersons

Report on the work of the United Nations Open-ended Informal Consultative Process established by the General Assembly in its resolution 54/33 in order to facilitate the annual review by the Assembly of developments in ocean affairs at its second meeting, held at United Nations Headquarters from 7 to 11 May 2001

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Part A
Issues to be suggested, and elements to be proposed to the General Assembly

General

Issue A
Further progress on the prevention, deterrence and elimination of illegal, unreported and unregulated fishing

1. It is proposed that the General Assembly should welcome the adoption by the Food and Agriculture Organization of the United Nations (FAO) Committee on Fisheries of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing and should invite States to take all necessary steps to implement it effectively.

Issue B
Protecting the marine environment from pollution and degradation from land-based activities

2. It is proposed that the General Assembly should welcome the recent progress on the implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA), invite States to participate in the intergovernmental review of GPA which is to be held in Montreal, Canada, from 26 to 30 November 2001, and invite the relevant international and regional organizations and international financial institutions to make inputs to the review in order to overcome the obstacles to the full establishment of the clearing-house mechanism under the Global Programme of Action and the development of regional and national plans of action.

Marine science and the development and transfer of marine technology, as mutually agreed, including capacity-building

Part I
Improving structures and effectiveness

Issue C
"Science for sustainable development": the importance of marine scientific research for the objectives of sustainable development

3. Marine science, and its supporting technologies, through improving knowledge and applying it to management and decision-making, can make a major contribution to eliminating poverty, to ensuring food security, to supporting human economic activity, to conserving the world's marine environment and to helping predict, mitigate the effects of and respond to natural events and disasters, and generally, to promoting the use of the oceans and their resources for the objective of sustainable development.

4. Because of the wide range of different circumstances and characteristics in different marine regions, there needs to be, where appropriate, a strong regional focus on international cooperation, including the support of the international community, in promoting marine scientific research and deploying marine scientific knowledge and technology; this regional focus needs to reflect the linkages to large marine ecosystems.

5. Effective marine science does not consist simply of a series of one-off projects; sustained efforts are needed to monitor and understand the development of the highly dynamic marine environments and to apply that knowledge to prediction and to management decisions.

Issue D
Strengthening international cooperation at the regional level

6. To ensure an intersectoral research approach, there is a need to establish or strengthen, as appropriate, regional cooperation, including that between relevant regional fisheries organizations and arrangements, regional seas programmes and other regional marine environment bodies, including their scientific and technical advisory bodies, and the regional marine science organizations, including those under the aegis of the Intergovernmental Oceanographic Commission (IOC).

7. Such cooperation is also proposed to include working, where appropriate, with global organizations, such as the FAO, the International Maritime Organization (IMO) and the World Meteorological Organization (WMO) and with regional projects under the aegis of IMO. The aim of such cooperation should be both the most effective use of the available resources, particularly by the avoidance of duplication, and the achievement of a holistic approach to the scientific study of the oceans and their resources.

8. To achieve better dialogue and cooperation, regional fisheries, environmental and scientific bodies could arrange meetings of their representatives.

9. States should be encouraged to fulfil their relevant obligations under international agreements. In particular, the regional centres foreseen by Part XIV of the United Nations Convention on the Law of the Sea (UNCLOS) (articles 276 and 277) should be established, with the technical assistance from the IOC and FAO, where they do not exist, and should be strengthened where they already exist.

10. To ensure a proper linkage between global and regional levels, the relevant bodies of the United Nations system should ensure appropriate interactions in marine science between them and the collaborative work of regional fisheries, environmental and scientific bodies or regional centres; the Intergovernmental Oceanographic Commission should act as a focal point for those interactions.

Issue E
Establishing better links between marine scientists and policy makers and managers

11. It is essential to achieve an integrated approach to national marine policy by all the many public authorities that are necessarily involved in oceans management, in accordance with programme area A of chapter 17 of Agenda 21.

12. To achieve the effective application of marine scientific knowledge and technology, it is essential that national and regional institutions, systems and approaches are developed, with the support of relevant global bodies which can draw on their experience in this field, so as to ensure that the results of marine science can be understood, assimilated and used by decision makers and resource managers, and that decisions drawing on marine science take, where applicable, full account of socio-economic factors and traditional ecological knowledge.

13. For these purposes, as part of the collaborative work of regional fisheries, environmental and scientific bodies, exchanges of experience among public officials from participating States should be organized, with the assistance of the Intergovernmental Oceanographic Commission, the Food and Agriculture Organization of the United Nations and other relevant international bodies, where appropriate.

Issue F
Proper planning of marine science projects and better implementation of the United Nations Convention on the Law of the Sea

14. The proper planning of marine science projects, whether basic or applied, should, among other things, be based upon the specific circumstances and needs of the local communities and national priorities and take account of the strategies developed by regional intergovernmental cooperation and the global context.

15. The consent regime under Part XIII of UNCLOS is the basis of all marine scientific research by third States in maritime areas under the national jurisdiction of coastal States. There is, however, a need to develop the general scientific criteria and guidelines referred to in article 251 of UNCLOS as well as national procedures based on a standard approach for seeking and granting consent as provided for in Part XIII, particularly in article 246.

16. There is an urgent need for cooperation at the international level to address the issue of the acquisition and transfer of marine scientific data to assist coastal developing States.

17. There is an urgent need to develop means to protect instruments and equipment deployed at sea for marine scientific research from vandalism and accidental damage.

18. The Intergovernmental Oceanographic Commission should be invited to request its Advisory Body of Experts on the Law of the Sea (ABE-LOS) to work, in close cooperation with the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, of the United Nations Secretariat, on the development of procedures under Part XIII of UNCLOS. States could consider nominating a suitable regional intergovernmental cooperative body as their common focal point under this consent regime, where this helps their particular circumstances. When this is done, such information should be published in the Law of the Sea Bulletin of the Division for Ocean Affairs and the Law of the Sea.

19. The Intergovernmental Oceanographic Commission and the World Meteorological Organization should be invited to consider, with the assistance of International Hydrographic Organization (IHO), how protection might be provided for moored and drifting scientific instruments and equipment on the high seas.

Issue G
Exchange and flow of data

20. It is important that the knowledge derived from marine scientific research and monitoring is made available to those who need it, especially to developing countries. Where this information has been collected under the consent regime of Part XIII of UNCLOS, it is also essential that the rights of the coastal State under articles 248 and 249 are respected, in particular those under article 249, paragraph 1 (d).

21. It is equally important that such information is made available to those who need it, especially to developing countries, at the regional and global levels, in a consistent data format and by means of information on where the results of the research can be found.

22. The Intergovernmental Oceanographic Commission should be invited to request its Committee on International Oceanographic Data Exchange (IODE) to expand its work on data formats to include meta-data (information on where to find data).

23. Relevant international bodies should be invited to consider the questions of intellectual property rights in relation to the marine scientific research regime established by Part XIII of UNCLOS.

Issue H
Capacity-building for marine science and technology

24. Bearing in mind the importance of marine science for eliminating poverty, for ensuring food security, for supporting human economic activity, for conserving the world's marine environment, for helping predict, mitigate the effects of and respond to natural events and disasters, and for promoting the use of the oceans and their resources with the objective of sustainable development, it is essential to build the capacities, in particular in developing countries, to conduct marine scientific research.

25. The development of human resources is the foundation to ensure a better understanding of marine science and technology and their potential. In developing countries, the fostering of these national capabilities presents special challenges, given the scarcity of financial resources and the reduced domestic awareness of the overall potential of marine resources. International cooperation, through bilateral, regional and international financial organizations and technical partnerships has played a key role in enhancing capacity-building activities for the transfer of environmentally sound technology associated with the sustainable development of marine resources, in particular in developing countries.

26. The general programmes for capacity-building may include, inter alia:

(a) Sustaining efforts towards developing the necessary skilled personnel, both by encouraging individuals to engage in marine science and by providing the necessary training and experience, including under the possibility of serving as observers under the right referred to in article 249 of UNCLOS of the coastal State to participate or be represented on board research vessels;

(b) Providing the necessary equipment, facilities and vessels, together with the essential infrastructure, such as electricity; to this end, the relevant international organizations, international financial institutions and the donor community should review their investment programmes to ensure that marine science is given adequate priority;

(c) Ensuring the development of the necessary skills and techniques, both for the efficient and effective use of equipment, and for implementing the Part XIII regime and for adopting and enforcing the necessary implementing provisions, as well as for interpreting scientific results and for their publication and dissemination so that they can be applied by decision makers to be presented to the wider public;

(d) Transferring environmentally sound technologies, in accordance with Part XIV of UNCLOS and the future programme regarding the implementation of Agenda 21, together with the provision to developing countries of financial and technical assistance for this purpose.

Issue I
Strengthening global action to deliver effective marine science

27. Bearing in mind the importance of marine science for eliminating poverty, for ensuring food security, for supporting human economic activity, for conserving the world's marine environment, for helping to predict, mitigate the effects of and respond to natural events and disasters, and for promoting the use of the oceans and their resources with the objective of attaining sustainable development, there is an essential need for a clear focal point for international cooperation on marine science. The extension of the mandate of the Intergovernmental Oceanographic Commission to cover ocean sciences and services, embodied in the 1999 revision of its statutes, should be welcomed and encouraged.

28. The United Nations Atlas of the Oceans, a project being developed by the Administrative Committee on Coordination (ACC) Subcommittee on Oceans and Coastal Areas (SOCA) to bring together existing marine scientific knowledge, should be welcomed as providing a means to integrate the marine scientific knowledge held in the databases within the United Nations system and a basis for the further development of means to improve access to the world's marine scientific knowledge by those who need it.

29. The United Nations Educational, Scientific and Cultural Organization (UNESCO) should be requested to strengthen the Intergovernmental Oceanographic Commission so that it has the resources needed to promote effective international cooperation on marine science and to carry out the tasks set out in the present conclusions.

30. The relevant bodies of the United Nations system, with the Intergovernmental Oceanographic Commission as the focal point, should review the aspects of their programmes that are relevant to marine science to ensure that appropriate priority is given on a consistent basis.

Part II
Priorities for marine scientific research

Issue J
General policy on marine science

31. The twenty-first century will be the era for the oceans. Humankind will need to devote ever greater effort to understanding, developing and conserving the oceans, and the oceans will play an ever greater role in the development of human society and economy. Understanding the oceans thoroughly, protecting the marine environment effectively and achieving the use of the oceans and their resources for the objective of sustainable development will become ever more important tasks for States.

32. The approach to understanding the oceans needs to be integrated, interdisciplinary and intersectoral. The ecosystem approach needs to be part of the global context of marine scientific research.

33. If the information resulting from marine scientific research and monitoring is to play its proper role in ensuring that important decisions are properly informed, that information must be available and reliable. The need for availability implies that it should be accessible through appropriate data centres, such as that of the International Council for Science (ICSU). The need for reliability implies equally the need for quality assurance of the data produced from any marine scientific research.

34. The Global Ocean Observation System (GOOS), coordinated by the Intergovernmental Oceanographic Commission in collaboration with other agencies, should be developed in a balanced way through the implementation of its various modules dealing with ocean and climate (of which the Array for Real-time Geostrophic Oceanography (ARGO) project is an example), marine pollution and coastal zones, so as to respond to the diversity of the requirements of Member States and other users.

35. There should be dialogues at the national, regional and global levels, as appropriate, between those responsible for marine policy decisions and those responsible for organizing marine scientific research programmes, in order to establish, within each appropriate area, the issues on which scientific advice is needed and the best means to provide it, taking particular account, in international cooperation, of the issues important to coastal developing States and their needs for capacity-building and transfer of technology.

36. When marine scientific research and monitoring projects are being set up, appropriate arrangements should be established for submitting the data to relevant national, regional or global data centres, and consideration should be given to the appropriate level of quality assurance for the data to be produced.

Issue K
Interactions between the atmosphere and the oceans

37. The interactions between the atmosphere and the oceans are fundamental for life, both on land and in the sea. Understanding the interactions between the atmosphere and the oceans is a crucial step towards understanding the way in which the oceans work, and therefore towards assessing what can be done.

38. Scientific understanding of the interactions between oceans and the atmosphere is, however, not enough. It is also essential both that decision makers should be aware of the implications of that understanding, and that it is properly presented to the public in general, so that they can contribute appropriately to decision-making. It is equally important that the options for management decisions are clearly presented. This scientific understanding can also be translated into practical use to increase the adaptive capacity of the community, especially in developing countries.

39. International action to promote marine scientific research, whether by bodies of the United Nations system or by other forms of intergovernmental cooperation, should aim to increase understanding of the ocean/atmosphere interface and its effects on living marine resources and the coastal zone and its communities, together with the scientific understanding of the other factors needed for the integrated ecosystem-based approach to the management of oceans and coastal areas and for the safe execution of maritime operations. These categories are not exclusive but shade into one another. International actors should also seek to address the disparity and availability of data, particularly meteorological data, in the different regions of the world.

40. New innovative projects should be welcomed and encouraged where, through international cooperation, they can provide an understanding of the structure and mechanisms of the circulation systems of the oceans and result in prompt and transparent sharing of the resulting information by as wide a range of users as possible.

41. Equally, such projects should, from the start, aim at the effective use by all States of the information generated, and should therefore be designed in such a way, and be accompanied by such capacity-building and transfer of technology, as will enable developing countries to make effective use of that information.

Issue L
The needs for scientific understanding for the management of marine ecosystems

42. The management of marine ecosystems is driven, inter alia, by the needs to eradicate poverty, to support economic prosperity, to safeguard food security and to conserve biodiversity. It requires a knowledge of the dynamics of the ecosystems, in relation to both living marine resources and biogeochemical factors. This must involve understanding, on the one hand, the status and trends of stocks of living marine resources, their location, quantification and long-term sustainable yield, the methods of fisheries management, and, on the other hand, the factors affecting water quality, including eutrophication, waste dumping and the source and fate of contaminants and their eco-toxicology. These factors are relevant to questions of pollution of both the seas and freshwater resources. The development of an ecosystem approach to ocean management should bring together monitoring and

basic and applied research by both the fisheries science community and the ecological science community. At the global level, FAO should work together with relevant global and regional organizations to develop this concept.

43. Associated themes also requiring study include the scientific understandings needed for crisis management and for carrying out environmental impact assessments in relation to fragile marine environments, the introduction of non-native species, the impacts of pollutants from vessels and from land-based sources, the economic, environmental and social impacts of subsidies and their effects on fishing efforts and the role of coral reefs as a means of obtaining early warning of ecological modifications resulting from climate change and other pressures.

44. Early action on these aspects may include, as appropriate, the further development of the concept of the ecosystem management approach and the completion of work on the draft International Plan of Action for Status and Trends Reporting on Fisheries.

45. Since large parts of the marine biosphere are still unexplored, there should be a welcome and support for projects aimed at investigating the biological diversity of the high seas and the biota, biotopes and habitats of the deep sea.

Issue M
The needs for scientific research for integrated management of oceans and coastal areas

46. Integrated management is driven, inter alia, by the need to manage the development of human activities in a sustainable manner. It requires scientific inputs from many disciplines; in particular, in the coastal areas, it requires an understanding of the interactions of land and water, of the factors affecting water quality and of the basis for settling differences on the use of the coastal areas, in both their seaward and landward parts. It also must be based on scientific information for land and sea area planning decisions and the information needed to predict, mitigate the effects of and respond to natural events and disasters. In addition, work is needed to collect and maintain a local knowledge base.

47. Early action is required to make progress on issues highlighted by the forthcoming intergovernmental review of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, which should aim to identify areas where scientific research is needed and to investigate the problems that may arise from marine pollution by groundwater discharges to the sea from aquifers.

Issue N
The need for scientific research for maritime operations

48. Marine scientific research and technological development for maritime operations are driven, inter alia, by the vital role of shipping in world trade. The fields that are particularly relevant are hydrography and meteorology (which is also relevant to the management of marine ecosystems and the integrated management of oceans and coastal areas) and the information needed to predict, mitigate the effects of and respond to natural events and disasters.

49. There is a need to provide accurate and up-to-date charts of the world's oceans in order to promote maritime safety, and for assistance to build hydrographic capacity for those coastal States that do not yet have adequate hydrographic services.

50. The International Hydrographic Organization, in consultation with other relevant international organizations, provides the necessary assistance to States, in particular to developing countries, where lack of hydrographic capability undermines the safety of navigation, the protection of the marine environment or the enforcement of laws against piracy and armed robbery at sea.

51. The World Meteorological Organization and the Intergovernmental Oceanographic Commission should assist States, in particular developing countries, which do not have an adequate coverage of stations to monitor weather conditions and the sea state in waters under their jurisdiction to help overcome these problems, which can threaten maritime safety and undermine efforts to predict, mitigate the effects of and respond to extreme weather and sea events.

Coordination and cooperation in combating piracy and armed robbery at sea

Issue O
General policy to promote cooperation and ensure coordination on combating piracy and armed robbery at sea

52. The recent rapid growth in incidents of piracy and armed robbery at sea, the harm that they cause to seafarers and the threats that they pose to the safety of shipping and, consequently, to marine and coastal environments and to the trade carried by sea make it essential to give higher national and international priority to efforts to eradicate these crimes which are often the result of transnational crime.

53. States and relevant international organizations should therefore consider whether their policies and programmes give adequate emphasis to the needs to prevent piracy and armed robbery at sea, to provide a proper framework for response to these crimes and to ensure an effective response to such incidents as they occur.

54. Effective prevention of and response to piracy and armed robbery at sea will require the support of the international community by providing adequate support to developing countries, in particular to coastal and flag developing States, in the areas of transfer of technology and capacity-building in their efforts to prevent piracy and armed robbery at sea.

55. In this connection, international financial institutions and the donor community should review their programmes to determine whether adequate provision is being made for investment in vessels and other equipment, including satellite tracking equipment.

56. It is suggested that the General Assembly should reiterate the need for all States and relevant international bodies to work together to prevent and combat piracy and armed robbery at sea.

57. The business sectors, such as chambers of shipping, maritime insurance industries and trade unions, can also play a useful role in support of the work led by the International Maritime Organization in combating piracy and armed robbery at sea.

Issue P
Prevention of piracy and armed robbery at sea

58. Effective prevention will involve the flag States of ships sailing into areas where piracy and armed robbery at sea are known to be likely, the owners, masters and crew of such ships, the coastal States in regions where incidents have occurred, and regional and international organizations concerned with shipping and crime prevention.

59. The International Maritime Organization should be invited to consider requiring that seafarers in regions where incidents of piracy and armed robbery at sea are likely to occur receive training on precautions against incidents of piracy and armed robbery at sea under the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers.

60. Governments should ensure that their procedures for registering ships guard against fraudulent registrations, can give prompt and accurate responses about the details of ships which may be involved in incidents of piracy or armed robbery at sea and record details of such involvement. The International Maritime Organization should be invited to quickly complete its work on guidance on how this should be done. The work of IMO to require ships to be fitted with automatic identification systems is welcomed and any further relevant work should be encouraged.

61. States should ensure that port authorities have appropriate measures in place to deter attempts at armed robbery within the ports, and that port staff have appropriate training in such measures. There should be a welcome and support for the work of the World Maritime University and of States in providing such training, or support for attendance at the World Maritime University, by way of capacity-building.

Issue Q
The framework for responses to piracy and armed robbery at sea

62. Articles 100 to 107 and article 58, paragraph 2, of UNCLOS set out the proper framework for response to piracy. The Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation and its Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms located on the Continental Shelf ("the Rome Convention and Protocol") may also be used for the

purpose of the prevention and suppression of armed robbery at sea.

63. It is proposed that the General Assembly should reiterate its call for States that have not done so to become parties to the Rome Convention and Protocol. Where they have not already done so, coastal States should adopt legislation to ensure that there is a proper framework for responses to incidents of armed robbery at sea. It is suggested for convenience that the approach in such legislation should work together with the approaches adopted by other States in their region.

64. All States should also ensure that the various public authorities, which are necessarily involved in dealing with incidents of piracy and armed robbery at sea, have a consistent approach to such incidents and are able to operate in an integrated manner.

Issue R
Response to incidents of piracy and armed robbery at sea

65. Effective responses to incidents of piracy and armed robbery at sea must be based on measures for prevention, for reporting incidents and for enforcement, including the training of enforcement personnel and the provision of enforcement vessels and equipment. The ability of States to make such effective responses is substantially enhanced when regional cooperation arrangements are in place. The aim should be the creation of a network of contacts between the public authorities concerned, based on mutual trust, assistance and the fostering of a common approach to enforcement and capacity-building between States as to enforcement techniques, and to the investigation and prosecution of offences. Such regional cooperation arrangements may, in suitable cases, be strengthened by the conclusion of formal agreements. It is suggested that the General Assembly should welcome the initiatives of the International Maritime Organization and individual Governments to that effect.

66. Since under-reporting of incidents of piracy and armed robbery leads to an underestimation of the seriousness of the problem, and consequently to enhanced risks, the owners and masters of ships should be encouraged to ensure that all incidents and threats of incidents are reported to the appropriate authorities and, through the flag State concerned, to the International Maritime Organization. The reporting procedures developed by IMO should be used to make it easy for reports to be submitted promptly.

67. States in regions where incidents of piracy and armed robbery at sea are likely to occur should ensure that there are adequate arrangements in place for receiving reports, communicating them without delay to all relevant authorities and alerting neighbouring States and ships in the area to incidents or threats of incidents. In this context, the cooperation of all States is essential.

68. The States concerned should take measures that the personnel involved in all aspects of the response, including apprehension, investigation, prosecution and exchange of evidence, are properly trained. There should be a welcome and support for work by international organizations and States to provide such training or to support its provision by others. The International Maritime Organization should be invited to complete its work quickly on a code of practice for investigations. The International Law Enforcement Academy should be asked to consider what contribution it can make to the development of good practice and training in enforcement in this field. States that might have information about facts or circumstances which lead to a presumption of the possible occurrence of acts of piracy and armed robbery at sea should provide such information to the relevant States.

69. Coastal States in regions where incidents of piracy and armed robbery are likely to occur should establish and keep up to date contingency plans for handling such incidents. In doing so, those States should, with the assistance of international and regional organizations, formulate arrangements to include handling of incidents which could result in major pollution of the marine environment.

General issues of coordination and cooperation

Issue S
Coordination and cooperation within the United Nations system

70. It is suggested that the General Assembly should continue to invite the Secretary-General to include in his annual report on oceans and the law of the sea material on the progress of the processes of

collaboration and coordination between the relevant parts of the United Nations Secretariat and the United Nations system as a whole, as described in paragraph 8 of resolution 54/33 and paragraph 42 of resolution 55/7.

Part B
Co-Chairpersons' summary of discussions

Agenda item 1
Opening of the meeting

1. The discussions at the first and the second plenary sessions of the second meeting of the United Nations Open-ended Informal Consultative Process established by the General Assembly in its resolution 54/33 in order to facilitate the annual review by the Assembly of developments in ocean affairs were based on General Assembly resolutions 54/33, 55/7 and 55/8, the annual report of the Secretary-General on oceans and the law of the sea (A/56/58), as well as on other documents before the meeting, including written submissions by States and international organizations, in particular document A/AC.259/4 submitted by Norway.

2. The overall legal framework for the discussions was provided by the United Nations Convention on the Law of the Sea of 10 December 1982 and its two implementing Agreements,[1] while chapter 17 of Agenda 21 provided the programme of action for the sustainable development of oceans and seas, which was re-emphasized in decision 7/1 adopted by the Commission on Sustainable Development at its seventh session.

3. The discussions were opened, on behalf of the Secretary-General of the United Nations, by Mr. Hans Corell, Under-Secretary-General for Legal Affairs, The Legal Counsel, and Mr. Nitin Desai, Under-Secretary-General for Economic and Social Affairs.

4. In his introductory statement, Mr. Corell placed emphasis on the transition from the establishment of norms to their implementation, on challenges facing the developing States such as limited capacity, scarce resources and inadequate means of implementation and on the need for global responses and international coordination and cooperation to address problems of the oceans.

5. Mr. Desai focused in his introductory statement on the convergence of the legal and programmatic dimensions of international cooperation on matters relating to the oceans, on the shared interest of all nations in the future of the oceans and seas, and on the need to address global environmental issues. He also spoke about the connection of the Consultative Process to the World Summit on Sustainable Development to be held in September 2002 in Johannesburg, South Africa. (The texts of the statements by Mr. Corell and Mr. Desai are contained respectively in annexes I and II to the present report.)

6. In his opening statement, Ambassador Tuiloma Neroni Slade (Samoa), Co-Chairperson of the meeting, focused on marine science and technology as being fundamental for decision-making in all sectors. Capacity-building and development of information and skills to manage the oceans are integral to the issue of marine science and technology. He highlighted the need for clear and concrete ideas about how to obtain scientific information and, then, how to apply it.

Agenda item 2
Approval of the format of the meeting and adoption of the agenda

7. Mr. Alan Simcock (United Kingdom of Great Britain and Northern Ireland), Co-Chairperson of the meeting, presented the proposals of the Co-Chairpersons for the format and annotated agenda of the second meeting (A/AC.259/L.2). In the light of the results of informal consultations preceding the meeting[2] and the comments of some delegations, he proposed that the meeting adopt its format and annotated agenda with several amendments. The meeting then adopted by consensus the format and annotated agenda as amended (A/AC.259/5). In accordance with one of the amendments, the Consultative Process would henceforth be referred to as the "United Nations Open-ended Informal Consultative Process established by the General Assembly in its resolution 54/33 in order to facilitate

[1] Agreement relating to the implementation of Part XI of the Convention and Agreement for the Implementation of the Provisions of the Convention relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

[2] Three rounds of informal consultations were held, on 23 February, 23 March and 4 May 2001.

the annual review by the Assembly of developments in ocean affairs".

Agenda item 3
Exchange of views on areas of concern and actions needed

The Consultative Process

8. Delegations re-emphasized their support for the Consultative Process and expressed their readiness to contribute to its effectiveness and success. They highlighted the value of the integrated approach to all matters concerning oceans and seas and of intergovernmental and inter-agency cooperation and coordination. It was pointed out that strengthening coordination at all levels in matters related to the oceans and seas was the overriding purpose of the Consultative Process.

9. Delegations noted with satisfaction the results of the first meeting of the Consultative Process, and the facts that General Assembly resolutions 55/7 and 55/8 had incorporated many elements resulting from it and that there had been some concrete progress in some of the areas discussed at the meeting. This, in their view, fully demonstrated the usefulness of the Consultative Process. In that connection, they expressed their appreciation to both chairpersons for their efforts and leadership.

10. It was further noted that the Consultative Process represented a unique entity within the more formal and sectoral approach of the United Nations family. One delegation pointed out that the Process needed to embody a comprehensive approach based on shared goals, understanding and information. One delegation stressed that the Process was a part of the consideration by the General Assembly of the agenda item "Oceans and the law of the sea" and emphasized its informal nature, stating that the Consultative Process should not be "institutionalized" in any way.

11. Another delegation suggested that, in order to underscore the informal character of the Consultative Process and better record the nature and scope of the discussions, the consensus report emerging from the discussions should be restricted to broad elements and themes.

12. The forthcoming review by the General Assembly of the Consultative Process and of its effectiveness and utility in 2002 was mentioned as well.

13. One group of States expressed the view that it was important to avoid duplication of work and engaging in debates falling beyond the mandate of the Consultative Process. In that context, those States did not find it appropriate to consider the issues concerning the continental shelf and underwater cultural heritage.

Implementation of UNCLOS, the related Agreements and relevant international instruments

14. Many delegations reiterated that the United Nations Convention on the Law of the Sea was of strategic importance and provided the fundamental legal framework for all activities related to oceans and seas. The historic significance of the entry into force of UNCLOS and the needs to achieve universal participation in it, to preserve its integrity and to ensure its full implementation were noted as well. Together with chapter 17 of Agenda 21, UNCLOS was once again reconfirmed as the basis for the discussions on effective cooperation and coordination of matters relating to the oceans and seas.

15. Importance was attached by delegations to the need for cooperation and coordination at global and regional levels in implementing UNCLOS and to the necessity of enacting national legislation in order to implement the provisions of UNCLOS.

16. Some delegations also welcomed the recent progress in the pace of ratification of the Agreement for the Implementation of the Provisions of the Convention relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks and noted that only two more ratifications were required for its entry into force.

Report of the Secretary-General

17. Many delegations expressed appreciation to the Secretary-General for the annual report on oceans and the law of the sea, highlighting its extensive and comprehensive nature and informational value. It was noted that the report was of central importance to the Consultative Process and its deliberations. The European Union noted the collection of information regarding legislative measures undertaken by States parties in implementing UNCLOS and welcomed the

Secretary-General's idea that an analysis of the information received would appear in his next annual report, as part of an overall assessment of the implementation of UNCLOS 20 years after its adoption.

Areas of focus

18. Delegations expressed appreciation at the identification by the General Assembly of the two areas of focus for the second meeting of the Consultative Process and welcomed the fact that in the agenda of the meeting the Consultative Process had organized its discussions around those two areas, e.g., (a) marine science and the development and transfer of marine technology as mutually agreed, including capacity-building in this regard; and (b) coordination and cooperation in combating piracy and armed robbery at sea.

19. It is to be noted that the annual report of the Secretary-General devotes a section (section VIII) and a subsection (subsection V.A), respectively, to the two topics. The report describes the legal regime for marine science and technology, as laid out in Parts XIII and XIV of UNCLOS, especially the "consent regime" for the conduct of marine scientific research in maritime areas under the sovereignty or jurisdiction of coastal States. The regime strikes a balance between the rights of coastal States to regulate and authorize the conduct of research in maritime zones under their jurisdiction and the rights of researching States to carry out research as long as it does not have any bearing on the exploration and exploitation of resources. The report describes the existing programmes on marine science and technology in the United Nations system. The report also addresses identified needs in marine science and technology, including the establishment of an administrative framework for marine scientific research activities and the development of national and regional marine science and technology centres.

20. With respect to piracy and armed robbery against ships, the report expresses concern at the increasing number of incidents reported in recent years. Actions taken or envisaged at the global and the regional levels are described, especially those under the auspices of the International Maritime Organization. Recommended actions for Governments and for the shipping industry are also set forth in the report.

21. The document by the delegation of Norway on "Marine science and the development and transfer of marine technology, including capacity-building" (A/AC.259/4) emphasizes that at the core of activating the marine science regime established by Part XIII of UNCLOS lies the adoption and implementation of national regulations relating to the conduct of foreign marine scientific research in waters under national jurisdiction and the identification of national focal points to coordinate such research activities. The document proposes a plan of action using Norwegian model legislation as an example to that end. The document also suggests a plan of action for assisting developing countries in drawing up a scientifically based integrated ocean management regime.

22. In accordance with the format of the meeting, a discussion panel was to lead off the discussions in each area of focus by making short presentations on relevant questions. The Co-Chairpersons underlined that the proposed descriptions of each area of focus were intended to be the starting points for the discussions and aimed at identifying issues that the discussion panel might choose to consider. These descriptions are contained in appendices I and II to annexes I and II of the document entitled "Draft format and annotated provisional agenda" (A/AC.259/L.2). The description of the area of focus of marine science and technology is divided into two parts, part I dealing with improving structures and effectiveness and part II with priorities in marine science and technology.

23. In their opening statements, both Mr. Corell and Mr. Desai underscored the importance of the two areas for the effective implementation of UNCLOS and chapter 17 of Agenda 21.

24. Mr. Corell stated that the issues relating to marine science and technology that called for international coordination and cooperation included the unhampered conduct of marine scientific research, a better understanding of oceans and also of their interaction with the earth and the atmosphere, a more effective interface between scientific knowledge and decision-making, the development and transfer of marine technology, and the strengthening of marine science and technology capacity. Mr. Desai emphasized that while oceans were central to the problems of sustainable development, a better and shared understanding of oceans was central to the sustainable use and management of oceans. He pointed out that human knowledge about oceans was far more

inadequate than about land. He identified certain key areas where human knowledge needed to be expanded, among them oceans and global climate change, biomass, fisheries and effects of marine pollution. He was of the view that marine science could be at the centre of international cooperation and coordination, including capacity-building.

25. Piracy and armed robbery at sea threaten the shipping industry and endanger the well-being of seafarers, Mr. Corell stated. He added that other crimes at sea, such as illicit traffic in drugs, smuggling of migrants and stowaways were continuing to rise. Parallel to these developments, the globalization of trade and the shipping industry was bringing newer issues to the fore: open-registry of ships and flags of convenience. Mr. Desai added that crimes at sea, for example, piracy and armed robbery against ships, jeopardized the very foundation of sustainable development. They could also constitute threats against the marine environment.

26. In addition, during the general exchange of views at the second meeting of the Consultative Process, delegations highlighted also the importance of follow-up of the areas of focus discussed at the first meeting, i.e., fisheries and the protection of the marine environment. They also expressed their wish to receive the most up-to-date information from the organizations and bodies concerned.

(a) Marine science and the development and transfer of marine technology as mutually agreed, including capacity-building

27. During the exchange of views on areas of concern and actions needed, delegations addressed the issues of marine science and technology. Delegations emphasized the fundamental importance of implementing the provisions of Parts XIII and XIV of UNCLOS, on marine scientific research and development and transfer of marine technology, respectively, as well as the marine science and technology provisions of chapter 17 of Agenda 21.

28. Delegations reiterated that Part XIII of UNCLOS established an overall global regime for the promotion and conduct of marine scientific research.

29. Many delegations emphasized that the focus should be on identifying what is necessary to make this important part of the Convention operational in practical terms. They strongly supported calls for an "action plan" for this purpose, containing concrete policies and results-oriented initiatives.

30. Many delegations indicated that in addition to the importance of implementing Part XIII of UNCLOS, a number of multilateral treaties in the environmental field, such as the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change, also had a bearing on marine scientific research.

31. Many delegations, in particular those of island States, identified marine science as an area of particular significance and focus in their region.

32. There was a consensus that knowledge about the oceans had to be expanded and that the promotion of marine science was essential for that purpose. There was also a consensus that the distribution of the existing knowledge was uneven. Developing countries, generally speaking, suffered from a lack of or insufficient access to the results of marine scientific research.

33. The provisions of articles 246, 248 and 249 of UNCLOS were recalled and their importance for developing coastal States underscored for the purposes of access to existing marine data from relevant databases, access to samples, obtaining assessment of data and research results and obtaining assistance in their assessment or interpretation. Recognizing that there might be a gap between the provisions of article 249 and practice in this regard, it was suggested that States could be encouraged to submit data to an international repository such as the IODE, and to participate in international oceanographic research projects.

34. The disparity in the availability of ocean data, particularly meteorological data, was mentioned.

35. Many delegations pointed out that it was in the interest of all that knowledge in the field of marine environment and sustainable use of the oceans and seas was developed and shared.

36. Beyond the expansion and distribution of the information base, there is also a need to develop a mechanism to ensure that scientific information is the "best possible", some delegations maintained. Mechanisms for vigorous peer review of scientific information can be useful for this purpose, they added.

37. A review of recent developments in marine science, especially oceanography and remote sensing, was offered by some delegations. Remote sensing and satellite-derived communications have been used to track the types and numbers of vessels in fishing areas or in specially protected areas. Those satellite tracking capabilities have also been used to track the amount of fish caught in specific fisheries and to track the migration patterns of protected species and of particularly threatened fish. Such data provide invaluable insight for national, regional and global management and protection strategies based on the scientific application of remote sensing data.

38. Remotely sensed data have also been used in weather and severe storm forecasting. In combination with in situ data, national Governments have significantly improved warnings to communities and populations in coastal areas to evacuate low-lying areas that are prone to storm surge and flooding attributable to hurricanes and tsunamis. Coupled with land remote sensed data, coastal managers and urban planners had been able to use historical data to identify areas that should not be developed for housing or hotels owing to their vulnerability. These data are also useful for mapping the coastal area, to identify critical watersheds and habitats, current human and potential human uses, such as urbanization, industrialization, tourism development, and agriculture.

39. Coupled with other remotely sensed data, ocean circulation and primary productivity data can be acquired to map the best places to site installations such as sewage treatment plants, monitor primary productivity due to non-point source run-off and the potential for harmful algal blooms. With this information and utilizing GIS techniques, coastal managers and land use planners can develop special management regimes to address outstanding concerns and potential impacts.

40. For many years, oceanographers have used, among other tools, satellite-derived sea surface temperature (SST) data to model the onset and severity of the El Niño Southern Oscillation (ENSO) and La Niña events. Elevated SSTs correlate with the incidences of coral bleaching throughout the tropics. Increases in the severity and duration of coral bleaching episodes potentially harm the economies of small island States that depend entirely on coral reef ecosystems for their livelihood.

41. Over the past five years, researchers have used satellites to measure sea surface height, oceanic winds and oceanic circulation patterns to monitor the formation and movement of giant ocean gyres. By monitoring and tracking these oceanic gyres, coastal managers have tracked the formation and movement of marine debris and derelict fishing gear that collect and float in the open ocean.

42. As a result of recent advances in information technologies in near real time, national Governments can now receive and process remotely sensed data and use them to support their decisions.

43. Passive underwater acoustics provide an ideal means to monitor ocean phenomena on a global basis. Significant discoveries have included the ability to monitor underwater seismic activity at levels far below the threshold of the land seismic networks; the detection of undersea volcanic activity associated with seafloor spreading and the discovery of the sub-seafloor microbial biosphere; and the distribution and migratory paths of large baleen whales, in particular the blue whale.

44. Hydrography and the need for hydrographic services were also discussed. Hydrographic services, which can carry out hydrographic survey, nautical charting and maritime safety information dissemination, are needed for marine navigation, coastal management, marine environment preservation, exploitation of marine resources, definition of marine boundaries and scientific studies connected to the sea and near-shore zone.

45. Many coastal States lack even the most elementary tools to carry out their own charting and surveying operations, even in the most elementary forms. IHO has a record of the countries that need assistance, e.g., in Africa, Central America, the South-West Pacific, East Asia, the Black Sea region, South America and other areas.

46. Many delegations identified key areas where marine science can contribute on an urgent basis. These areas include: delineating ecosystem boundaries, identifying key ecosystem functions and components, integrating scientific, technical and socio-economic information, developing predictive models and risk assessment, developing performance indicators, and assessing the state of ecosystem health, especially in the context of integrated management of ocean affairs; fisheries conservation and management; biodiversity

and the environment of the deep oceans, in particular relating to seamounts; interaction of the oceans and the atmosphere and its implication for climate change; pollution in oceans and seas and its impacts on freshwater resources; impacts of pollution on fragile ecosystems, including closed and semi-closed seas; the role of fisheries in the socio-economic welfare of developing countries; ways of controlling and preventing unsustainable fishery; ballast water and its impacts on the marine environment; dumping of wastes, hazardous wastes and radioactive and chemical wastes; dismantlement of ships; marine pollution in coastal areas and its effects on agriculture and freshwater; crisis management in emergency situations and environmental impact assessment for implementation of projects potentially considered dangerous in fragile marine environments; study of sustainable harvest and the dynamic nature of exploited marine species and stocks; exploration of ecosystem impacts of ocean harvest, taking into account natural environmental fluctuations and the impact of pollutants on the marine ecosystem, its rational exploitation and other marine ecosystem services; and coral reef conservation and fisheries and the coral reef ecosystem.

47. On the other hand, many delegations expressed their reservations with regard to taking up certain issues in the Consultative Process which by their very nature fell within the competence of specific forums, so as not to prejudice or duplicate efforts. Those issues included, according to them, questions relating to the continental shelf, the submarine cultural heritage and marine mammals.

48. That marine science was fundamental to sound decision-making was underscored by delegations.

49. The two-pronged approach to marine science — "science for science" and "science for development" — was highlighted by a number of delegations. Many delegations were of the view that while the "science for science" approach had its value and contributed to human knowledge, the "science for development" approach had not been pursued in the past to a desirable degree. More emphasis should therefore be placed on the latter approach.

50. Many delegations, especially those of island States, emphasized the promotion of "science for development" for addressing their practical needs, especially for their immediate and medium-term sustainability, and also for exploring potential areas for positive cooperation. In that context, there was a need for countries undertaking marine scientific research not only to fulfil their obligations to share data under Part XIII of UNCLOS, but to do so in a manner that was meaningful for small island developing States and to provide assistance in relevant product development.

51. In the same vein, many delegations emphasized "marine science and technology for sustainable development". They emphasized capacity-building and access to the means of implementation to that end, including capabilities for development planning and the incorporation of marine sectors therein, international financial resources and technological capabilities.

52. The interrelated nature of ocean affairs calls for an integrated management approach and integrated management is especially dependent on information from marine science: this was asserted by many delegations.

53. The need for a holistic and interdisciplinary approach to marine science was pointed out by many delegations. In that context, some delegations referred to the concept of "science within science", i.e., the ability to integrate observations from various sub-disciplines of the marine sciences. The needs, in that connection, were to ensure that ocean science programmes were balanced to cover all critical aspects of ocean systems, to possess the capacity to integrate data and information from a wide variety of sources, and for scientists to continue to work in multidisciplinary teams. Others asserted that the usual "piecemeal approach" to marine sciences must give way to a more holistic approach that took into account the needs of the various sectors that required sound marine science for their operations. Still others offered a view that the large marine ecosystem (LME) approach, endorsed by many important institutions such as the Global Environment Facility (GEF), was the most appropriate one from a holistic perspective.

54. Going beyond collaboration among marine scientists themselves, many delegations pointed to collaboration in wider circle of stakeholders, including marine scientists and social scientists, pure science and corporate science, and academic-based knowledge and traditional and customary knowledge and management practices.

55. Moving from marine science to marine technology, many delegations pointed to the provisions of Part XIV of UNCLOS on the development and transfer of marine technology. In that context, appropriate international funding in research and development was an important aspect, in their view. The need of many States, especially developing States, for advice and assistance was also identified.

56. Many delegations considered the issue of transfer of technology as a priority in the area of marine science and technology. Many others pointed to the need of developing countries for the acquisition of the most up-to-date technology.

57. Some delegations mentioned an urgent challenge with respect to the development and transfer of marine technology for providing developing countries, including the least developed States and small island developing States, with adequate funding and technical assistance for the submission of technical and scientific data with respect to their extended continental shelf to the Commission on the Limits of the Continental Shelf, in accordance with article 76 of UNCLOS.

58. Many others concurred that a critical example of the need to "operationalize" marine science and technology transfer could be found in the context of the continental shelf issue.

59. Delegations underscored the needs of developing countries with respect to capacity-building in marine science and technology. It was acknowledged that there was a marine science and technology gap between developed and developing countries. Credible and practical ways were to be devised to encourage the exchange of information between developed and developing countries on marine science and technology.

60. Many delegations were of the view that capacity-building was necessary to achieve the common goals of the preservation and sustainable use of the oceans and seas and that capacity-building went together with appropriate transfer of technology. Cooperation between developing and developed countries was essential in that regard. Many delegations believed that capacity-building should be strengthened within the existing institutions at the global, regional and national levels.

61. Capacity-building was considered by many delegations to be a priority in the area of marine science and technology. Others emphasized ensuring that any action plan to implement Part XIII of UNCLOS would profile capacity-building initiatives in a cross-sectoral manner and in a way that would guarantee the position of developing countries, particularly coastal States, as active participants and beneficiaries. Still others pointed to the challenges of developing national programmes on marine science and technology, such as organizational and institutional requirements, drawing in civil society and NGOs, the rational utilization of scarce resources to further national goals and mobilizing regional synergies and cooperation.

62. Capacity-building requires effective training of scientists and administrators, it was stressed by many delegations. In addition to training of scientists, the efficient use of equipment and calibration are necessary. Some delegations elaborated the effective design of ocean science programmes for developing countries, which would incorporate clearly defined objectives, clearly enumerated specific aspects and clearly postulated methodologies. Such programmes would have to involve all major stakeholders; should address social and economic goals and should be ongoing rather than one-shot.

63. Crucial areas of building capacity in marine science were identified by many delegations. These included marine fisheries, coastal ecosystems and sustainable coastal fisheries, coastal and marine biodiversity, marine non-living resources and the continental shelf, marine pollution, global climate change and linking national activities to regional systems and groupings.

64. Delegations urged the strengthening of international coordination and cooperation in marine science and technology, including at the intergovernmental and inter-agency levels. The necessary steps were encouraged at all levels for an effective and coordinated implementation of the provisions of UNCLOS and Agenda 21, including institutional adjustments and an improved coordination mechanism for chapter 17 of Agenda 21 to support action at the national and regional levels in developing countries and the provision of financial and technical assistance for the transfer of environmentally sound technologies. In that context, the international community was urged to promote, facilitate and finance access to and transfer of environmentally sound technologies and the corresponding know-how to

developing countries on concessional and preferential terms. The importance of regional cooperation was stressed by delegations. It was added that successful regional cooperation needed to be supplemented by global cooperation. At the inter-agency level, IOC could serve as the focal point ensuring coordination, it was suggested by some delegations. Some other delegations suggested cooperation between IOC and the United Nations Environment Programme (UNEP). Still others suggested cooperation among IOC, UNEP, FAO and the regional organizations of Regional Seas Programme and regional fisheries management organizations.

65. Many delegations pointed to national and multilateral measures, existing or under development, which in their view addressed the issues of marine science and technology and of international coordination and cooperation therein in an effective manner. Such measures included: the IOC programme on the international exchange of data and information; GOOS, a cooperative programme of States and the organizations of the United Nations system and the related ARGO project; the Global International Waters Assessment (GIWA); the efforts of FAO relating to information on status and trends with respect to fisheries and marine living resources, including the development of an international plan of action (IPOA) and assistance in national capacity-building in fishery statistics; the IOC-WMO Joint Technical Commission on Oceanography and Marine Meteorology; the development and implementation jointly by the United Nations Industrial Development Organization (UNIDO) and the United States of America of GEF-supported ecosystem-based international waters projects involving 16 countries in Africa; the United Nations University's Fisheries Training Programme for practising professionals from the fisheries sectors in developing countries; the European Union (EU) Programme for Scientific and Technological Cooperation with Developing Countries and, within its framework, research on oceans and seas by the Research and Development Programme of EU (INCODEV); the multilateral programme, Census of Marine Life, to assess and explain the diversity, distribution and abundance of marine life in the world's oceans, and its component, Ocean Biogeographic Information System (OBIS), designed to be an online, worldwide atlas of marine life; existing regional and global mechanisms to promote the access of developing countries to science and technology; regional cooperation along the lines of active scientific cooperation in the North-East Atlantic within the International Council for the Exploration of the Sea (ICES); training and technical assistance available in developed States, for example, the United States, including educational and training programmes, fellowships and scholarships, clearing houses, databases and web sites; the Canadian International Development Agency's "Strategy for Ocean Management and Development"; Norway's programme of assistance in developing national regulations relating to the conduct of marine scientific research in waters under national jurisdiction and its contribution to the trust fund for facilitating the preparation of submissions to the Commission on the Limits of the Continental Shelf by developing States; and the International Marine Projects Activity Centre (IMPAC) of the Cooperative Research Centre for the Great Barrier Reef World Heritage Area of Australia, facilitating cooperation in the areas of fisheries management, coastal planning, management and research, and policy development for oceans governance.

66. A number of concrete suggestions were offered for the improvement of international coordination and cooperation. These included: the establishment of a clearing-house mechanism for marine science similar to the existing GPA clearing-house mechanism; establishment of focal points for marine science and linking them up with relevant actors, such as the Joint Group of Experts on Scientific Aspects of Marine Environmental Protection (GESAMP) and GOOS, with regional organizations playing an important role in this respect; development of programmes for the competent international organizations that have implementing responsibilities under Part XIII of UNCLOS; strengthening of the regional organizations of the regional seas programme of UNEP through further cooperation of relevant international organizations with them; establishment of centres for the dissemination of information on marine scientific research and technology; strengthening of GEF and other financial institutions, enabling them to actively finance capacity-building projects in developing countries; identification of the existing intergovernmental centres of excellence on marine science and technology with a view to disseminating information on them and exploring the possibility of cooperation among them; development of regional marine science and technology centres, and financing for such centres; exploring the feasibility of

establishing a regular process for the assessment of the state of the marine environment, with greater cooperation between regional seas organizations and regional fisheries organizations; workshops and joint technical meetings among regional organizations on subjects of mutual interest, for example marine science and its impact on fisheries, habitat destruction and pollution; joint programmes that may result from such joint meetings; transfer of technology through training; transfer of data through the use of the Internet; development of a single, comprehensive web site on international ocean affairs to facilitate exchange of information; and hydrography to be included in the appropriate development projects proposed by the United Nations funding agencies, the European Commission and other participant donor agencies, national as well as international, in order to achieve an adequate hydrographic data coverage by means of the creation of national hydrographic services.

67. Some delegations pointed out that the two areas of focus for the meeting, marine scientific research and piracy, while seemingly far apart in scope, were related at one level. Research vessels operating around the world were beset by the problems of piracy and armed robbery at sea. In addition, there was an increasing problem of vandalism of floating high-tech research equipment as well as moored oceanographic instruments. In view of the apparent correlation between mooring's data return and fishing activities in the oceans, it was suggested that efforts to combat vandalism could include the distribution of information brochures to national fishing agencies, fishing boats in ports and industry representatives.

(b) Piracy and armed robbery at sea

68. Delegations stressed the importance of discussing the matters of piracy and armed robbery in the context of the Consultative Process. It was pointed out that all nations needed to be actively engaged in combating these growing threats which seriously affected navigation, the security of the crews of ships, as well as international maritime trade. It was further pointed out that, owing to the global nature of the threats, there was a need to consider countermeasures on a global level. Particular concern was expressed in connection with the recent increase in piracy and armed robbery in the seas of South-East Asia.

69. Delegations also commended and endorsed efforts by the International Maritime Organization in this respect. A number of endeavours were mentioned, such as the correspondence group on "Code of Practice for the Investigation of the Crime of Piracy and Armed Robbery against Ships", the IMO Regional Expert Meeting on Combating Piracy and Armed Robbery against Ships, held in Singapore in March 2001; various seminars organized by IMO; as well as other actions, including resolutions of the IMO Assembly encouraging member States to cooperate to combat piracy. It was pointed out that IMO should be further reinforced in order to be the institution for coordination in the suppression of crimes at sea.

70. In addition to the cooperation within the framework of IMO, delegations mentioned several regional initiatives, such as the Regional Conference on Combating Piracy and Armed Robbery against Ships, held at Tokyo in March/April 2000, and the planned Asian cooperation conference on combating piracy and armed robbery, to be held at Tokyo in the latter part of 2001. It was stressed that regional cooperation should be strengthened to develop an efficient information-exchange system among the States concerned with crimes at sea.

71. It was reiterated that the Consultative Process should address issues of piracy mainly from the perspective of cooperation and coordination and that the relevant organizations should deal with specifics, in the light of the duty of all States to combat piracy.

Conservation and management of marine living resources; illegal, unreported and unregulated fisheries

72. Many delegations noted with appreciation the adoption in March 2001 by the FAO Committee on Fisheries of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing and stressed the overall importance of the plan. A number of delegations called upon all States and fishing entities to implement it, as a matter of urgency, together with other FAO plans and instruments, such as the International Plan of Action for the Management of Fishing Capacity and the Code of Conduct for Responsible Fisheries. They suggested that implementation could be achieved through national legislation, international and regional organizations and fisheries management bodies and that FAO should provide coordination and assistance in that regard.

73. Several delegations expressed their continued concern about illegal, unreported and unregulated fishing (IUU fishing) and in particular about the use of flags of convenience. They called upon all flag States to take measures, in accordance with international law, with a view to solving the problem and encouraged cooperation through regional fisheries management organizations. They further noted the progress made by FAO and IMO in identifying the possibilities of more effective actions against IUU fishing by flag States and port States.

74. In that connection, the central role of FAO as a coordinator for those regional fisheries management organizations was reiterated. It was also suggested that the General Assembly of the United Nations and the Consultative Process should monitor closely the implementation of the Plan of Action.

75. Among other initiatives, delegations recalled the concept of the Forum for Sustainable Fisheries, a worldwide coalition of multilateral agencies, Governments, organizations, the private sector and banks, other components of civil society as well as fishermen, which was being formed to assist developing States in achieving sustainable management of their living marine resources. They also mentioned the convening of the Conference on Responsible Fisheries in the Marine Ecosystem in Reykjavik in October 2001, which should highlight the application of marine science to ecosystem-based fisheries management.

76. Regarding various achievements in the cooperative approach by both coastal States and distant-water fishing States, the adoption of the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Central and Western Pacific in 2000 was highlighted, as well as efforts that were under way to bring that instrument into force as soon as possible.

77. The representative of FAO discussed issues related to fisheries, including fisheries trends and status reporting, successful efforts to improve coordination, and technical consultations and seminars. Regarding IUU fishing, he highlighted the adoption of the International Plan of Action and referred to parallel efforts of FAO and IMO to address the issues of implementation by flag States and by port States.

Marine environment and marine pollution

78. With respect to the marine environment and marine pollution, a number of delegations referred to the role of UNEP in the field of the protection and preservation of the marine environment, especially from land-based sources. Mention was made of the development of frameworks, such as Global Programme of Action for the Protection of the Marine Environment from Land-based Activities or the regional seas programme, together with examples of regional cooperation, such as North-West Pacific Action Plan promoted by Japan.

79. Delegations welcomed the efforts deployed by UNEP to prepare the forthcoming Intergovernmental Review Meeting on the Implementation of the GPA, to be held at Montreal in November 2001. Some observed that there had been a low level of participation from the United Nations agencies dealing with the implementation of the GPA. Also, the representative of the GPA Coordination Office informed delegations about the focus and organization of the Review Meeting. In that context, the European Union underscored, in view of the still incomplete donor base, the need for adequate financing.

80. A view was expressed that UNEP should act as a focal point in the field of the protection and preservation of the marine environment and provide for coordination among different regions. Accordingly, the regional organizations of the UNEP regional seas programme should be strengthened and their cooperation with regional fisheries organizations should be improved. It was also suggested that the cooperation between UNEP and IOC should be enhanced to develop the scientific methodology necessary for both coastal management and the protection of marine environment.

81. It was further proposed that GEF and other financial institutions should be strengthened to enable them to actively finance the capacity-building projects in developing States. In that respect, it was also proposed to invite international financial institutions, including GEF, to support the implementation of projects in developing States in a number of areas, such as the control and reduction of pollution, waste management and recycling projects, prevention of dumping of wastes and hazardous substances, environmental impact assessment for projects potentially harmful to the marine environment, etc.

82. It was noted that it was important for the multilateral treaties in the environmental field, such as the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change, to be understood also in the context of UNCLOS. In that context, one delegation recalled the proposal it had made at the first meeting, to conduct a review of the national, regional and global implementation of Part XII of UNCLOS.

83. One group of States reiterated its concern at the transit of radioactive material and hazardous wastes along coastal routes or navigable waterways, given the risk of harm which the practice carried for marine ecosystems, and called for strict compliance with the security norms and standards applicable to the transport of such material and wastes established by the International Atomic Energy Agency (IAEA) and the International Maritime Organization. It further reiterated its commitment to strengthen the international regime on the security of the transport of radioactive material.

84. Referring to the risk of serious and irreversible damage to the marine environment, in particular to sensitive habitats, from unsustainable development and practices, which were not confined to the exclusive economic zones of coastal States, one delegation proposed that the concept of marine protected areas should be applied to waters beyond the limits of national jurisdiction. The delegation expressed the view that such "international marine protected areas" might serve as a tool for integrated conservation and management, without prejudice to the rights and obligations of States under UNCLOS.

85. The representative of the Baltic Marine Environment Protection Commission (HELCOM) spoke about the achievements of regional cooperation in reducing marine pollution and about the state of the marine environment in the Baltic Sea.

Capacity-building and assistance to developing States

86. It was noted that capacity-building, together with appropriate transfer of technology, was necessary to achieve the common goals of the preservation and sustainable use of the oceans and seas and that cooperation between developing and developed States was essential in that regard. It was pointed out that capacity-building should be strengthened within the existing institutions on global, regional and national levels and that the efforts which were being undertaken in the United Nations system and at the regional level should continue to be supported.

87. A number of delegations welcomed the inclusion of a section on capacity-building in the Secretary-General's report. Some expressed the wish for further analysis of the gaps and overlaps in the capacity-building activities. Several delegations expressed their appreciation to donor States which had pledged or made contributions to the trust funds established pursuant to resolution 55/7.

88. In addition to the important discussion on capacity-building which took place under the area of focus on marine science and technology, it should be noted that the United States representative encouraged delegations to investigate the numerous possibilities for training and technical assistance available in the United States and announced that information on many of those programmes would be posted on the Department of State web site in June (http:\\www.state.gov).

International coordination and cooperation

89. It was noted by many delegations that, while the discussions of the second meeting would focus on marine science and piracy, the mandate of the Consultative Process included areas in which cooperation and coordination could be enhanced among international bodies.

90. A number of delegations concurred with the Secretary-General's assessment that there was an overall lack of coordination and cooperation in addressing ocean issues, which prevented more efficient and results-oriented ocean governance. Those delegations stressed the need for cross-sectoral responses at all levels, starting at the national level, and urged the Secretary-General to take further measures aimed at ensuring more effective collaboration and coordination between the relevant parts of the Secretariat and the United Nations system with respect to ocean affairs and the law of the sea, with the aim, inter alia, of avoiding duplication and streamlining the activities in different forums. In that regard, collaboration between UNEP and FAO on sustainable fisheries was highlighted as a positive example.

91. Several delegations expressed the view that full advantage should be taken of existing organizations and bodies, such as IMO, FAO, UNEP, IOC — UNESCO, which had played an important role in dealing with the relevant issues of oceans and had expertise and knowledge in the area of coordination. They proposed that each of those organizations or bodies should act as a focal point within their respective areas of competence and that they should coordinate all other organizations or bodies concerned. In addition, it was suggested that the International Seabed Authority should undertake overall responsibility with respect to the development and management of the non-living marine resources of the international seabed area.

92. It was pointed out that, at the present time, the main focus should be to strengthen the functions of relevant organizations and mechanisms involved in ocean management, to enhance coordination and cooperation among them and to strengthen assistance to developing States for their capacity-building.

93. On the international level, the clearing-house mechanism established under the Global Programme of Action was highlighted as a successful approach to improve coordination and cooperation.

94. It was further proposed that, with respect to the dissemination of information on ocean affairs, all international organizations concerned should consider jointly setting up a single comprehensive web site.

95. Regarding cooperation at the regional level, the Pacific Islands Forum States reported that they were developing a regional integrated ocean policy which would, in part, examine ways to improve coordination and cooperation among their regional organizations and provide a more coherent framework for addressing the priority needs of their region.

96. As far as the national level was concerned, examples of comprehensive legislation devoted exclusively to oceans, such as the Oceans Act of Canada, were mentioned as an illustration of blueprints for the integrated management of ocean activities. It was noted that the shift towards such integrated management had gained momentum also on the international level, presenting challenges in relation to planning process as well as to governance.

Panel discussions: Areas of focus

(a) Discussion Panel A: Marine science and the development and transfer of marine technology as mutually agreed, including capacity-building

Part I
Improving structures and effectiveness

97. The discussions in Part I of Panel A on improving structures and effectiveness with respect to marine science and technology were led off by presentations from the following representatives: Mr. Patricio A. Bernal, Executive Secretary, Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO); Ms. Lene N. Lind, alternate head of delegation, Norway; Mr. Robert Duce, Chairman, Joint Group of Experts on Scientific Aspects of Marine Environmental Protection (GESAMP); Mr. Jorge E. Illueca, Assistant Executive Director, United Nations Environment Programme (UNEP); and Mr. Alfred Simpson, Director, South Pacific Applied Geoscience Commission (SOPAC).

98. **Mr. Bernal** provided an overview of ocean sciences, in particular from the perspective of IOC, which was task manager for science in the context of chapter 17, Oceans and seas, of Agenda 21. Ocean science can be pursued from two approaches: science for understanding (or "science for science", as described in earlier sections of the present report) and science for development. Science for understanding currently focused on climate change, biogeochemical cycles and regulation of climate. The focus of science for development was on the sustainable use of resources, the protection and preservation of the marine environment and integrated coastal area management (ICAM).

99. Mr. Bernal then described three strands of ocean sciences: ocean sciences 1, 2, and 3. Ocean sciences 1 are aimed at preserving the integrity of the natural services provided by the oceans based on an understanding of the oceans. There are many natural cycles and processes relating to the oceans and the unique life-support system of the earth depends on a balanced interplay of these cycles and processes. Ocean sciences 1 attempts to deepen the scientific understanding of the interplays. Because of the intensity of human use of the oceans in the recent period, the maintenance of the balance is an issue of

increasing concern. The central objective of ocean sciences 2 is to provide a sound basis for policy formulation, akin to that of science for development. Many coastal and marine resources are affected by over-exploitation and unsound practices. These concerns are at the centre of ocean sciences 2. Loss of life and property attributable to ocean-generated natural disasters, such as storms, hurricanes and tsunamis are the concerns that are at the centre of ocean sciences 3, the basic objective of which is forecasting future states of the oceans.

100. Mr. Bernal then discussed international ocean science, in which he identified four main streams: climate change, ocean-atmosphere interaction, human dimension of global change, and ocean observation at the global level. The programmes of international ocean science are planned and coordinated internationally, implemented jointly by organizations of the United Nations system and NGOs, with the active participation of the international scientific community and the engagement of governmental agencies and institutions.

101. International scientific work on climate change is carried out under the World Climate Research Programme (WCRP), which uses a multidisciplinary strategy for the investigation of the physical aspects of climate and climate change. The main projects under the programme are Climate Variability and Predictability (CLIVAR), World Ocean Circulation Experiment (WOCE), and Global Energy Water Cycle Experiment (GEWEX).

102. The International Geosphere Biosphere Programme (IGBP) and its eight core projects address the issues of ocean-atmosphere interaction. Two of the important projects are the Joint Global Ocean Flux Study (JGOFS), which investigates carbon cycles and the role of the oceans, and the Global Ocean Ecosystem Dynamics (GLOBEC), which studies large marine ecosystems and large-scale shifts in ocean regimes.

103. The human dimension is studied under the International Programme on the Human Dimension of Global Change (IHDP), which is an emerging programme.

104. Ocean observations at the global level are carried out by the Global Ocean Observing System (GOOS). GOOS is a sustained and coordinated international system for gathering data about the world's oceans and seas, sponsored jointly by IOC/WMO/UNEP/ICSU with the active involvement of States. Its initial observing system is operational, and substantially increased observations are planned during the period 2002-2005, especially through the deployment of about 3,000 ARGO floats. GOOS constitutes a single system in which all ocean data, from both remotely sensed sources and in situ sources, would be collected, combined and processed. Its goals are universal participation by developing and developed States and the provision of services for use by end-users for the purposes of, inter alia, the protection and preservation of the marine environment and international ocean governance.

105. **Ms. Lind's** presentation focused on the implementation of Part XIII of UNCLOS, especially the consent regime for the conduct of marine scientific research. In her view, Part XIII tries to strike a balance between the principle of full freedom of research and the coastal State's interest in controlling activities in maritime areas under its sovereignty and jurisdiction. On the one hand, marine scientific research may only take place with the consent of the coastal State. On the other hand, the coastal State must exercise its powers in a predictable and reasonable way, and with a view to promoting and encouraging the conduct of scientific research as much as possible.

106. Under article 255 of the Convention, States are encouraged to adopt reasonable rules, regulations and procedures to promote and facilitate marine scientific research beyond their territorial waters. The adoption of such rules and regulations based upon a common understanding of the rules of Part XIII will provide clarity and predictability for scientists involved in planning research projects facilitate the standardization of requests for research projects, and ensure an improved flow of information through authorized organizations and channels.

107. For coastal States, the provisions of section 3 of Part XIII are particularly important. Section 3 lays down the balance of interests between the coastal State in relation to research activities of other States and international organizations, in its territorial sea and exclusive economic zone and on the continental shelf.

108. The consent regime applies in the exclusive economic zone and on the continental shelf (article 246). In the territorial sea, the coastal State exercises full sovereignty and jurisdiction (article 245). The

conduct of the marine scientific research shall be with its express consent.

109. Ms. Lind informed the meeting that Norway had found it most practical to adopt unified and coherent regulations on marine scientific research covering all areas under Norwegian sovereignty and jurisdiction. Research cruises often cover areas of both the territorial sea and the exclusive economic zone, and requests for cruises inside the territorial sea might occur as often as requests for cruises outside it.

110. In section 3, the core of the compromise between the coastal State's interests and those of the researching States is shown through the articles on tacit or implied consent and the right of the coastal State to withhold consent under specified conditions, or to require the suspension or cessation of the research in progress in the exclusive economic zone and the continental shelf if the research does not comply with the information or the obligations required.

111. For an effective and efficient implementation of the Part XIII regime, it is desirable that all States designate national focal points to coordinate research activities and respond to applications. Ideally, the designated body should be part of the government organization involved in marine matters, particularly marine scientific research activities. An important function of such office would be to ensure that all relevant government agencies are notified of the research project and to coordinate the reply to the researching State. The office should also be responsible for informing all relevant agencies and authorities, such as the coast guard and port authorities, of the decision to grant consent.

112. Marine scientific research may be conducted freely in the water column beyond the limits of the exclusive economic zone, according to articles 257 and 87 of UNCLOS. The same is the case, according to articles 143 and 256, for the area defined in the Convention as the seabed and ocean floor and subsoil thereof beyond the limits of national jurisdiction. In Ms. Lind's view, these provisions are particularly relevant in relation to compliance with article 76 and article 4 of annex II to the Convention. Research institutions and organizations conducting studies of the continental margin will collect data of the same type to be acquired for the purpose of mapping the limits of the continental shelf. Similarly, all the bathymetric and geophysical data acquired on the outer edge of the continental margin and adjacent deep sea by the world's marine research institutions and organizations are highly relevant for any State that intends to establish the outer limits of its continental shelf beyond 200 nautical miles. Ms. Lind suggested that within the United Nations, the so-called GRID-system (Global Resource Information Database) of UNEP might be a suitable candidate to host and develop a centre for research data from the outer continental margin intended to serve the needs of coastal States and developing countries in particular.

113. **Mr. Duce** discussed the work and role of GESAMP, sponsored by IMO, FAO, UNESCO, WMO, the World Health Organization (WHO), IAEA, the United Nations and UNEP. GESAMP was established to provide advice relating to the scientific aspect of marine environmental protection to the sponsoring agencies and, through them, to their member States. The other purpose of GESAMP is to prepare a periodic review and assessment of the state of the marine environment and to identify problem areas requiring special attention.

114. The unique characteristics of GESAMP are that it is the only inter-agency mechanism designed to provide independent and cross-sectoral analysis and advice, based on marine science, concerning the prevention, reduction and control of the degradation of the marine environment.

115. GESAMP works through its working groups formed to address a particular issue or problem that has been identified by the agencies or member States. Working group members work inter-sessionally. GESAMP itself meets once a year, when it reviews working group reports, decides on new issues that require working groups and evaluates emerging issues for further consideration.

116. Over the past 30 years, 140 scientists have served as members of GESAMP and over 340 have participated in GESAMP working groups. These scientists are unpaid independent experts from over 50 countries, both developing and developed, selected by the sponsoring agencies based on their scientific expertise. GESAMP has produced 41 specific reports on issues related to the protection of the marine environment. Topics of recent reports include the safe and effective use of chemicals in coastal aquaculture, the global input of pollutants from the atmosphere to the oceans, marine biodiversity: patterns, threats and

conservation methods, and the contribution of science to integrated coastal management.

117. Mr. Duce then highlighted the two most recent reports: *A Sea of Troubles* and *Protecting the Oceans from Land-based Activities*. The former is a state-of-the-marine-environment report and was often quoted by participants in the meeting. The latter assesses the problems relating to the protection of the marine environment from land-based activities, identifies emerging problems and new perspectives, and highlights the regional perspective. It then develops certain strategies and measures and concludes with priorities for action.

118. Based on the work of GESAMP, Mr. Duce identified a number of priority problems for the global marine and coastal environment. These include alteration and deterioration of habitats and ecosystems; the effects of sewage on human health and the environment; widespread and increasing eutrophication of coastal waters; and the decline of fish stocks and other renewable resources.

119. Mr. Duce concluded by stating that GESAMP is currently undergoing a comprehensive review, the first in its 30 years of existence, by an independent group of peers to make it more effective and more responsive.

120. **Mr. Illueca** focused on the work of UNEP in the area of the marine and coastal environment, which was a central issue of the twenty-first session of the Governing Council of UNEP in February 2001. One-fourth of the 31 programmatic decisions of the Governing Council were related to the work of UNEP in oceans and coastal areas, touching on issues such as the strengthening of the regional seas programmes, coral reefs, the GPA, the establishment of a secretariat for the Northwest Pacific Action Plan (NOWPAP), the finalization of negotiations on a new regional seas convention for the North-East Pacific extending from Colombia to Mexico, interlinkages in the work programmes of regional seas programmes and global conventions such as the Convention on Biological Diversity and chemicals-related conventions, and the assessment of the state of the marine environment. Most of these decisions contained elements related to marine science.

121. Three important decisions are particularly relevant to the issue under consideration by the meeting: Governing Council decision 21/13 on global assessment of the state of the marine environment; decision 21/28, entitled "Further development and strengthening of regional seas programmes: promoting the conservation and sustainable use of the marine and coastal environment, building partnerships and establishing linkages with multilateral environment agreements"; and decision 21/12 on coral reefs.

122. The work of UNEP relevant to marine science is basically focused on eight areas: the assessment programmes of the regional seas conventions and action plans; the GPA; the Global International Water Assessment (GIWA); work on marine and coastal biodiversity of the UNEP World Conservation Monitoring Centre; the Millennium Ecosystem Assessment; the International Coral Reef Action Network (ICRAN) and the International Coral Reef Initiative; the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP); and the Global Environment Outlook (GEO) reports.

123. There are currently 17 regional seas programmes currently in operation. Fourteen of them were facilitated by UNEP and three were developed independently but today are working closely with UNEP and its regional seas programmes as partners. Environmental assessment is an essential element of the action plans of regional seas programmes. Monitoring and assessment activities provide a scientific basis for setting regional priorities and policies, particularly for issues such as integrated coastal area management. Assessments are also made of the social and economic factors that relate to environmental degradation and the status and effectiveness of national environmental legislation.

124. Under the GPA, regional seas secretariats are undertaking a number of regional assessment activities, including the preparation of regional diagnostic studies of marine degradation from land-based activities. The GPA clearing-house mechanism is developing as a useful tool for disseminating and exchanging information. Subject to availability of resources, future emphasis will be placed on developing web-based geographic information capabilities to better support decision makers.

125. GIWA is focusing on the root causes of environmental degradation in 66 international marine, freshwater and groundwater areas around the world. Financed by the Global Environment Facility, GIWA aims to provide the most objective and comprehensive

assessment of transboundary water problems ever made.

126. Through ICRI and the ICRAN project, assessment and management activities for the protection and sustainability of coral reefs are being promoted worldwide.

127. With regard to GESAMP, for the recent publications *A Sea of Troubles* and *Protecting the Oceans from Land-based Activities*, UNEP provided the Technical Secretary of the GESAMP Working Group on Marine Environmental Assessments, which produced both of these important reports. The preparation of the latter report was initiated by UNEP as a contribution to the first intergovernmental review meeting on the progress in the implementation of the GPA, to be held at Montreal in November of 2001.

128. Through the Global Environment Outlook (GEO), several thematic areas, including the coastal and marine environment, are periodically assessed on a regular basis. GEO aims to provide policy-relevant assessments. GEO-2000 is the latest in this flagship series of assessment reports, with the next scheduled for 2002 as a contribution to the World Summit on Sustainable Development.

129. Mr. Illueca then focused on Governing Council decision 21/28, which, in his view, was of particular relevance to the deliberations of the Consultative Process, particularly in section (d), entitled "Partnerships with international organizations". Largely as the result of the report of the first meeting of the Consultative Process, UNEP and FAO had embarked on a joint initiative resulting in the preparation of a report entitled "Ecosystem-based Management of Fisheries: Opportunities and Challenges for Coordination between Marine Regional Fisheries Bodies and Regional Seas Conventions". At the Third Global Meeting of Regional Seas Conventions and Action Plans, held in Monaco in November 2000, the recommendations of the report were endorsed by the 17 regional seas programmes. Subsequently, the Governing Council in its decision 21/28 endorsed the recommendations of the Monaco meeting, as well as the following actions for enhanced cooperation: the formalization of the observer status of the regional seas conventions and action plans at the meetings of the governing bodies of regional fisheries bodies and their technical subsidiary organs, and vice versa; the exchange of data and information available at the levels of regional fisheries bodies and regional seas conventions and action plans that may be of mutual interest; and the design and implementation of joint programmes between regional fisheries bodies and regional seas conventions and action plans, taking fully into account the respective mandates, objectives and scope of the regional seas programmes.

130. In addition to welcoming the joint initiative between FAO and UNEP for enhanced cooperation between regional fisheries bodies and regional seas conventions and action plans on issues relevant to ecosystem-based management of fisheries, the UNEP Governing Council in decision 21/28 invited the IOC/UNESCO, through its Global Ocean Observing System, given the complementary work that it was undertaking, to participate in the UNEP/FAO initiative. As in the case of the close UNEP partnership with IMO in supporting the regional seas programmes in the area of emergency response to oil spills and accidents from other ship-borne hazardous substances, UNEP would like to strike a similar partnership with IOC in support of the assessment activities of the regional seas programmes.

131. Mr. Illueca concluded by drawing the attention of the meeting to Governing Council decision 21/13 on the global assessment of the state of the marine environment. In that important decision, inter alia, the Council requested the Executive Director, in cooperation with IOC/UNESCO and other appropriate United Nations agencies, the secretariat of the Convention on Biological Diversity and in consultation with the regional seas programmes to explore the feasibility of establishing a regular process for the assessment of the state of the marine environment, with the active involvement of Governments and regional agreements, building on ongoing assessment programmes, such as GESAMP.

132. **Mr. Simpson** began his presentation by underscoring the status quo in dealing with ocean matters. In his view, the attitudes have not changed: a perspective of ownership rather than stewardship is still applied in ocean matters, and a terrestrial mindset rather than an oceanic one is still prevalent. He demonstrated his point by providing certain statistics about the island countries of the Pacific region. For example, with the exclusion of Papua New Guinea, 2.5 million people in 500 islands in the Pacific region are responsible for about 27.1 million square kilometres of the Earth's surface, comprised of 27 million sq km of

exclusive economic zone and 93,500 sq km of land territory. This translates into an ocean:land ratio of 290:1, which can be viewed as an index of stewardship of oceans that has to be provided by the island countries in the region, which in Mr. Simpson's view should be referred to as "large-ocean island developing States" rather than "small island developing States".

133. He then dealt with the challenges to the capacity of such States: essentially the limitations of financial, technical and human resources. The institutions are weak, which means that the legal and policy arrangements are not complete. There are few specialists in legal and ocean governance. The region does not have any research vessels and has only a few research institutions and few regional marine scientists. The occurrence of a number of marine minerals, such as manganese nodules, cobalt-rich crusts and polymetallic sulphides has been established, but their quantity is too small for commercial exploitation. Only one licence has been issued to date, for the exploration of polymetallic sulphides. The region is rich in fishery resources, but less than 4 per cent of the catch value is returned to the region as access fees from distant water fishing nations. To compound the problems, the region has the highest concentration of natural hazards in the world. The region is also flanked by the countries in the Pacific rim, with an estimated coastal population of 2 billion, who generate considerable amounts of waste, part of which ends up in the oceans.

134. According to Mr. Simpson, although there are 19 States parties to UNCLOS in the region and only 3 non-States parties, the high rate of participation in UNCLOS does not appear to have made much material difference.

135. The countries in the region support participation in the international ocean observing systems. They are planning to participate in the ARGO programme, with the initial ARGO floats scheduled to be deployed in the region later in 2001. There have been a number of marine scientific research cruises since 1953, 196 of them since 1990 involving nine researching States, in the exclusive economic zones of 16 Pacific island States. However, only 25 per cent of the known collected data are at the disposal of the island States; according to Mr. Simpson, this means that the exchange of data envisaged in Part XIII of UNCLOS has not materialized. SOPAC is proposing a process whereby the data collected from marine scientific research by foreign countries in the exclusive economic zones of Pacific island States will be exchanged to a fuller extent through the SOPAC Cruise Database, Oceanographic Databank and Seismic Databank.

136. Pacific island States have already taken a regional approach and are planning to enhance the applications of that approach. On the issue of the implementation of UNCLOS, two regional workshops were held, in 1998 and 1999 respectively. One regional workshop in 2001 dealt with marine scientific research and the implementation of the marine scientific research regime established by Part XIII of UNCLOS. The region is envisaging the development of a regional oceans policy. Such a policy was recommended by a regional workshop in 1999, was subsequently endorsed by the Leaders of the Pacific islands Forum and is currently being developed by the Council of Regional Organizations in the Pacific.

137. The regional workshop on marine scientific research recommended the development of regional marine scientific research guidelines, to focus on capacity-building involving effective participation in marine scientific research, and not merely representation. The guidelines would comprise the following key components: a standardized form; identification of contact points and establishment of national arrangements; development of a data protocol to unify the various formats currently in use, many of them unreadable; development of a regional data standard to set norms in the face of the diversity and consequent loss of utility of data produced and shared by current marine scientific research activities; and the development of a regional meta-data database. In recognition of the fact that marine scientific research and exploration were parallel activities, the workshop also recommended the development of policy and guidelines in this context.

138. Mr. Simpson concluded by enumerating certain enabling factors that would translate the concept of sustainable development into reality, including: the development of baseline data and information; enhancement of carrying capacity; ensuring sustainable yield, effective monitoring and review; development of policy and legislation; participation of trained personnel; achievement of economies of scale through regional cooperation; and application of transparent and clearly formulated guidelines.

139. The discussions that took place after the presentations focused on a substantial number of

issues. Delegations placed in context the importance of the area of focus by recalling that marine scientific research and the knowledge resulting from it contributed to the eradication of poverty, addressed food security issues, sustained economic development and the well-being of present and future generations, and in general, provided for the effective protection of the marine environment.

140. Delegations focused on their national experience with regard to marine scientific research, transfer of technology and capacity-building. Cooperative activities and programmes were suggested by many delegations. The regional approach was also emphasized.

Legal framework for the conduct of marine scientific research (MSR)

141. Some delegations suggested that the establishment of a focal point for dealing with requests for marine scientific research could be useful. It was also suggested that States could forward the names of the focal points to the United Nations Secretariat to be published in the Law of the Sea Bulletin of the Division for Ocean Affairs and the Law of the Sea.

142. While some delegations pointed to the need to establish reasonable conditions in accordance with Part XIII for the granting of consent, others shared their positive experience in that regard. They indicated that the infrastructure in place in their countries had allowed for consent to be given to all requests under Part XIII and within the time limit of four months established by article 252. Other delegations pointed out that even in the case of research having direct significance for the exploration and exploitation of natural resources or research taking place in their territorial sea, they were not aware of any denials to requests under Part XIII. They explained that the coastal State might have an economic interest in taking advantage of research cruises in areas under their national jurisdiction. This point was emphasized by Mr. Simpson, who stressed the importance and interest of most developing countries, in the South Pacific in particular, in science for development or science for management.

143. With reference to the issue of consent, Mr. Simpson stated that even though there might be some cases where consent was denied because of suspicion or lack of internal structure to handle the marine scientific research-related request, in his region, however, what was more important was the "track record" of the requesting State or institution. In that connection, he reiterated that his organization had in return received barely 25 per cent of all collected data and information from foreign marine scientific research cruises. Many delegations concurred and expressed concerns about the fact that despite all the marine scientific research projects that were taking place globally, UNCLOS provisions about data and information exchange in particular might not be fulfilled. Other delegations added that that was true not only for cruise data but also for post-cruise data.

144. Many delegations stated that in view of all the marine scientific research projects currently being carried out, full and effective implementation of the Convention should be ensured, particularly with regard to equitable sharing of information and with respect to transfer of technology and environmentally sound technology.

145. Some delegations pointed out that compliance with the duty to have the coastal State's representatives on board the research vessel, when requested, had allowed for some marine scientific research cruises to contribute to capacity-building in those countries by involving research scientists from the coastal State in the research programme being carried out. Whenever possible, that should be encouraged, they added.

146. Also with reference to the issue of consent, a question was raised as to the practice of States when research requests would likely be interfering with other legitimate uses of the sea.

Exchange of data

147. With reference to the lack of exchange of data with and communication of data to the coastal States concerned, some delegations attributed this state of affairs partly to the fact that many States did not have the necessary internal structure or the capability to handle the data obtained.

148. In some circumstances, particularly for most developing countries, the data provided could not be interpreted and put to use because of unreadable format. Some delegations called for data to be transmitted in an appropriate manner and format. In that connection, some States stressed the need to adopt a data protocol.

149. As to the question of the provision of cruise data, some delegations suggested the use of the ROSCOP (Report of Observations/Samples Collected by Oceanographic Programmes, also known as Cruise Summary Report) format, a meta-data recording format hosted by ICES that could allow coastal States to keep track of the data collected, the instruments which had been used, and the site of storage of the data. Questions were also raised regarding the issue of intellectual property rights and patents, and in this connection suggestions were made that States needed to clarify the issue from the legal point of view.

150. Some delegations called for a more transparent and systematic system for the exchange of data and information in order to allow States, inter alia, to better coordinate the communication of the information to their public. This would help avoid negative perceptions among concerned communities.

151. Also with respect to the exchange of data, mention was made of the example of JAMSTEC, the Japanese marine science and technology centre, which provided their data and outcomes through its web site. It was also observed that data were exchanged through the framework of the International Ocean Data Exchange (IODE), promoted by IOC.

152. It was pointed out that in the case of the SOPAC countries, with the exception of Papua New Guinea, which had established its own structure to handle marine scientific research requests, SOPAC, as the extension of national competence, was the focal point for all marine scientific research activities and maintained a cruise database for the region. The issue was deemed to be related to that of capacity-building since, in the particular case of SOPAC countries, the lack of trained personnel had led to the transfer of most UNCLOS responsibilities to the regional organization.

153. Some delegations, although recognizing the importance of the establishment of regional mechanisms, suggested that in the cases of many countries, that arrangement might not be effective since in those cases the Ministries of Foreign Affairs were generally considered to be the appropriate channel for marine scientific research activities.

154. Delegations pointed to the importance of establishing national marine scientific research centres to process the requests, advise the appropriate stakeholders of decisions to grant or deny consent and deal with cruise-related and post-cruise issues. The centres could also assist in the establishment of priorities and guidelines for research activities, which would in turn assist researching countries. They would be faced with known conditions and practices that would allow them to adjust their research project requests.

Transfer of technology and capacity-building

155. Some delegations pointed out that a substantial portion of the world's oceans and seas fell under the national jurisdiction of the developing countries. Furthermore, a sizeable part of the ocean was under the national jurisdiction of small island developing States. Capacity-building, therefore, would be central to delivering concrete results in marine scientific research and activities based on such research, along with the appropriate transfer of technology. In that regard, some delegations also emphasized, as another aspect of capacity-building, the necessity for developing countries to be actually involved in all the relevant programmes and organizations.

156. Some delegations stated that the transfer of appropriate technology and know-how was essential for building effective marine scientific research capacity in the developing countries. The importance of direct investment and bilateral aid was stressed for assisting developing countries in building the scientific and administrative basis of their fisheries management systems, in view of the central role of fisheries for developing countries.

157. Some delegations pointed out that it was important if not imperative for the developing countries to have access to reliable technical advice and information on effective management practices and the experience from such practices. Access to such information and advice would assist in the improvement of fisheries management arrangements in a manner befitting domestic circumstances and would ensure conservation and optimal sustainable yield of living marine resources.

158. Many delegations agreed with the panellists that initiatives such as the Forum for Sustainable Fisheries should be encouraged and should be given a new momentum.

159. Many delegations emphasized that the lack of technical, financial, technological and institutional capacity in the developing countries to effectively tackle the catastrophes and threats to the ecology of the

oceans and seas was among the main constraints they were facing in establishing integrated ecosystem-based approaches.

160. The representative of the International Ocean Institute (IOI) noted that the international law dealing with ocean affairs consisted of many conventions, protocols, codes of conduct and action plans. The international institutional framework that had emerged was therefore fragmented, inadequately coordinated and difficult to manage. This posed still further difficulties in particular for small and poor States in their efforts to keep abreast of the current situation. In that regard, there was a need to build capacities at both national and regional levels and to develop the existing international institutions and programmes to take into account the special needs of those States. It was especially important to create first of all, at the national level, some of the most important tools of implementation of the established legal framework, namely: enforcement capability, scientific/technological capacity and financial capacity. Without national capacity, there could be no effective international cooperation.

Protection of the marine environment

161. Several delegations maintained that a thorough and comprehensive knowledge of the state of the oceans and seas was essential for protecting the marine environment. The two recent GESAMP reports had concluded that despite improvements in managing some of the pressures, the overall state of the world's seas and oceans was deteriorating. This was attributed by some delegations to the fact that despite the wealth of information on the marine environment and the availability of new information, there was a lack of an overview particularly on the links between the state of the marine environment and cross-cutting issues of human health, seafood safety and sustainable use of living marine resources. Decision makers thus needed to have at their disposal regular assessments of the impact of human activity on the state of the marine environment, including its socio-economic consequences, at the national, regional and — with regard to pollution — global levels.

162. Delegations stressed that it was important for all studies to be based on a holistic approach which would take into account both the living and the non-living parts of the marine environment. Ecosystem models based on such an approach could constitute an important tool in furthering the understanding of interactions of marine ecosystem components and identifying specific gaps in knowledge and for defining research priorities. Delegations were of the view that such models should be encouraged.

Marine pollution

163. Delegations pointed to the impact of marine pollution on the sustainable use of living marine resources and on other marine ecosystems. They stressed that the current process of assessment of marine pollution needed to be strengthened. It was observed that the process of making scientific results policy-relevant was just as important as the process of collecting the data. There was a lack of coherence in the follow-up at the international level and the development of policy recommendations based on the assessment reports.

164. Some delegations suggested that consideration should be given to undertaking a global assessment of the marine pollution. In this context, reference was made to UNEP Governing Council decision 21/13. The comprehensive assessment envisaged in that decision would, inter alia, focus on the impact of marine pollution and physical alteration and destruction of habitats in relation to public health, food security, biodiversity and marine ecosystem health, including the marine ecosystem services. The other appropriate agencies to be involved in such an assessment would include WHO, IMO, FAO, IAEA, UNIDO and WMO.

165. Some delegations were of the view that such an assessment, in which an effort would be made to involve all stakeholders, should not only identify improved end-uses of the assessment but should also identify ways to improve communication with decision makers.

166. The representative of Greenpeace urged the cessation of the maritime transport of nuclear material because of the threat of accidents, which could have a major impact on the environment and human health consequences and potentially bring about important economic losses. He also cautioned against using the ocean as a carbon sink.

167. Some delegations called attention to what was in their view, the least studied phenomenon, namely submarine groundwater discharge and its impact on the coastal zone. While the magnitude of such discharge might be relatively minor, in areas dominated by river

flow, recent studies had indicated that groundwater might occasionally account for a significant fraction of the freshwater inflow. The problem was to develop from both a scientific and a management standpoint a method for assessing the ways in which this phenomenon altered coastal ecosystems, with its effects on the water level and fluxes, caused withdrawal or alterations in the recharge patterns and the groundwater water quality, as well as its potential impact on coral reefs. Such major interventions in the coastal zone management system required a sound scientific justification and a degree of technical understanding not currently available. In that connection, the National Oceanographic Committee of the Russian Federation had started a study on SGD at the international level and undertaken to conduct a collaborative project on assessment and management implications of submarine groundwater discharge. Such a programme would need financing to carry out studies at the five sites selected.

Living resources

168. Many delegations stated that the global monitoring of stocks of marine living resources was an area in need of strengthened cooperation and coordination. It was necessary to ensure that information supplied was up to date, comprehensive and reliable, particularly when it was being used for policy purposes. While FAO had a central role to play, the submission of basic biological information from member States as well as cooperation with regional fisheries organizations were also essential factors in successfully addressing such problems.

169. Some delegations stated that there was a need to improve the understanding of ways in which ecosystems worked. This would allow for better multi-species management of living resources. Research in this area should be conducted primarily at the local or regional level as the characteristics of ecosystems varied greatly among the different areas of the world. Long-term monitoring and detailed investigations of different species and their interactions were the only safe means of obtaining the necessary level of understanding to ensure sustainable development.

170. In that connection, delegations stressed the importance of the establishment of precautionary reference points as a basis for decisions on fisheries and marine ecosystems management. This was a necessary precondition for the application of the precautionary principle envisaged in the 1995 Fish Stocks Agreement. Cooperation between research institutions, regional fisheries organizations and FAO needed to be improved to establish such reference points, particularly for the large number of stocks where such data were still insufficient.

171. In addition, the representative of Greenpeace cautioned against overfishing and the threats to many ecosystems that were suffering increasing degradation as a result of a multiplicity of activities. He called attention to the phenomenon of genetically engineered fish, characterized by increased size and accelerated growth. Such fish had the potential of becoming invasive species that could cause irreversible damage to wild fish stocks as well as to the wider marine environment. Scientific experiments had suggested that the introduction of a few transgenic individuals could wipe out entire populations within just a few generations. The international community needed to address this newly emerging threat.

Decision-making: Science for management, science for development

172. Many delegations, in particular those from the South Pacific region, made observations regarding the necessity of applied research for the benefit of developing countries. In that regard, it was suggested that the concept of science for development should be further articulated.

173. The representative of ICES also emphasized that the success of all the international agreements and other arrangements formulated to address the issue of the sustainable management of the marine environment and living resources depended heavily on the quality of the scientific advice available to decision makers. Decision makers needed advice that was unbiased, sound and credible. In response to the newly developing trends, ICES had modified its organizational structure to foster interdisciplinary collaborative science and had established a strategic planning process to better position itself in addressing emerging challenges. In that regard, it has also developed a close partnership with decision makers and management organizations. Through a Memorandum of Understanding which spells out the type and timing of advice to be provided by the Council, and makes provision for dealing with extraordinary requests, ICES is attempting to respond to the need for scientific advice to support more integrated management of

marine ecosystems. This interactive process could be used as a model, which might be pursued at both the national and the international level.

174. Other delegations recognized that, with regard to fisheries management, there was a need to improve on the structure and effectiveness of marine science. In some regional fisheries management organizations there was a lack of clearly defined and agreed management objectives, with consequences for the science/stock assessment process that had left those organizations with no agreed basis for management responses to stock assessment. To increase the organizations' effectiveness, there was a need to develop stronger links between science and management through the development of, inter alia, clearly defined management objectives incorporating the precautionary approach, to promote effective communication between scientists and managers so that the scientific assessment objectives were aligned with management issues, and to ensure that managers comprehended the likely impacts of advances in science on stock assessments and any associated management decision practices and strategies.

175. The representative of the International Hydrographic Organization pointed out that IHO was an intergovernmental and consultative organization involved in systematic surveys of the sea bottom with the aim of producing electronic nautical charts that can use the GIS. The bathymetric aspects of the surveys were carried out in collaboration with IOC. The data gathered could be used for many different applications, including the identification of the outer limits of the continental shelf, fisheries monitoring and assessment, investigation of water level changes, monitoring of ocean dump sites, and so forth. In view of the necessity to improve the knowledge of the sea bottom, many coastal States, with inadequate hydrographic services, needed to build their capacity. Investment was necessary in that regard. IHO, for its part, offered training programmes through national and international centres.

176. Some representatives of international agencies and organizations cautioned that scientific organizations needed to focus on the production line of science, since the necessity of "packaging" the scientific information together with social and economic information might distract those organizations from their central mandate. The demand for science per se needed to be clearly defined. In that context cooperation among organizations with different mandates, purposes and goals within specific programmes would respond to the specific needs and concerns of States with regard to sustainable development. Attention was drawn to the United Nations Atlas of the Oceans as an endeavour of several United Nations organizations and agencies to offer comprehensive information on the oceans.

International cooperation and coordination

177. Several delegations reaffirmed that the responsibility for the state of the oceans and seas was a matter for both national Governments and international bodies. To respond adequately to the needs and problems of the marine environment, it was crucial to provide for coordination and cooperation at the national, regional and global levels.

178. Some delegations emphasized the importance of improved coordination and cooperation between agencies at the international and regional levels in view of the reliance of most developing countries on those organizations for marine scientific research and transfer of technology. Those organizations were called upon to develop their technical cooperation programmes so as to foster capacity-building in developing countries which would enable them to comply with international standards and obligations. In that regard, more training and scholarships were needed. Many delegations pointed out that research programmes, particularly those of international institutions, should take into account the specific needs of developing coastal States. In addition, there should be more synergy between the developed countries, donor countries and the United Nations system in addressing issues related to the oceans.

179. Many delegations recognized the need for an integrated management of the oceans and coastal zones to be effected through the establishment of intersectoral and interdisciplinary approaches. In that regard, coordination might also require institutional adjustments. It was pointed out that coordination and cooperation between existing research efforts needed to be improved and strengthened at all levels.

180. Some delegations considered the global monitoring of marine living resources to be one of the areas in need of strengthened cooperation and coordination.

181. Many delegations pointed out that it was encouraging to note that the needs of developing countries relating to their lack of technical, financial, technological and institutional capacity were being addressed through international cooperation and international programmes.

182. In that regard, some delegations cited various specific international programmes with a mandate in science and technology as good examples of cooperation and coordination. It was also pointed out that certain international programmes were in need of improvement.

Regional cooperation

183. Many delegations expressed their support for regional initiatives; particular mention was made of regional fisheries organizations and the regional seas programme of UNEP. Delegations recognized that activities at the regional level had often proved effective.

184. The representative of IOI pointed to the example of the regional seas programmes of UNEP. It was in such regional seas, which were closely associated with most of the identified large marine ecosystems that pollution control as well as management of living resources and other uses of the common ocean space could be facilitated. From the economic standpoint such ocean spaces offered opportunities for economies of scale; and from the cultural and historical points of view, there were often a commonality of interests. Coastal States, especially small or poor States, could do together what none of them could do alone. The representative stressed that the international community needed to be aware that when dealing with tools of implementation in a regional context, it had become necessary to coordinate and integrate the various convention regimes.

185. She added that the legal basis for cooperation in the development and transfer of marine technology was found in articles 276 and 277 of UNCLOS, which provided for the establishment of regional marine scientific and technological research centres. It was suggested that, through adaptation to all the new conventions adopted subsequently, provisions of those articles had been reinforced and should be implemented. The implementation of those provisions could be viewed in the context of the UNEP regional seas programme.

International organizations and agencies

186. The representative of IMO, the organization in charge of organizing the review of GESAMP, highlighted GESAMP as a good model for coordination and cooperation among United Nations agencies that needed to be preserved. In that regard, the review of GESAMP could be considered as an effort to assess the effectiveness of such a mechanism in adequately addressing the emerging problems and priorities of the international community. The review was expected to lead to the conclusion that there was no need for the establishment of additional scientific bodies for oceans assessment. What was needed, as had also been pointed out by other delegations, was to improve communication among United Nations agencies and Governments. It was necessary to create an environment needed in which scientific advice could be properly and more rigorously used in the decision-making process.

187. The representative of WMO highlighted the establishment of the Joint Technical Commission on Oceanography and Marine Meteorology (JCOMM) as one response to the need for an interdisciplinary approach in ocean matters. JCOMM was a coordinating body for all current and future marine activities of WMO and IOC. A major initial priority was the implementation of an ocean observing system for climate, which will require the equal engagement of both meteorologists and oceanographers. JCOMM sought to pool the expertise and resources of the meteorological and oceanographic communities, both nationally and internationally, through WMO and IOC. An outreach programme would be conducted to enhance the capacity of all maritime countries both to contribute to JCOMM and to benefit to the maximum extent from the outcome of its activities.

Role of the Intergovernmental Oceanographic Commission

188. Many delegations welcomed and supported the role of IOC in coordinating marine scientific activities, ocean services and related capacity-building. The Commission was encouraged to continue developing its role as the focal point for marine scientific research. The potential functions of the IOC Advisory Body of Experts on the Law of the Sea (ABE-LOS) were also highlighted. Other delegations called for more capacity to an enhanced level for IOC to enable it to fulfil its role. The IOC regional bodies could play a central role

in regional scientific cooperation and monitoring and their cooperation with regional seas arrangements and regional fisheries organizations and arrangements should be strongly encouraged. Such regional cooperation could provide a means of fulfilling the obligation under UNCLOS regarding the establishment of regional centres for marine science and technology.

189. IOC was strongly encouraged to increase its cooperation and forge partnerships in particular with the regional seas programmes, of UNEP, with other agencies and programmes, and, in the area of scientific programmes, even with organizations outside the United Nations system. The Commission was also urged to promote the open exchange of oceanographic information and data, using internationally accepted formats that could be utilized and managed by its members. Finally, IOC should encourage the integration of coastal zone management policies in the development of marine scientific research programmes.

Consultative Process

190. Some States reaffirmed that the establishment of the Consultative Process constituted an appropriate answer to States' concerns about coordination and that it contributed to an integrated approach to ocean issues. That had been achieved partly because of the different dimensions of the Process where lawyers, managers, scientists, custodians of the marine environment, etc., gathered in a single revenue, and where law could be checked against implementation. In that connection, the improved ocean affairs culture at the agency and the United Nations level could be attributed to the Process.

Part II
Priorities in marine science and technology

191. The discussions in Part II of Panel A on priorities in marine science and technology were led off by presentations from the following representatives: Mr. Patricio A. Bernal, Executive Secretary, IOC/UNESCO; Mr. Hein Rune Skjoldal, Institute of Marine Research, Bergen, Norway; Dr. Li Jingguang, Director General, State Oceanic Administration, China; Dr. Norman P. Neureiter, Science and Technology Adviser to the Secretary, United States Department of State, jointly with Dr. W. Stanley Wilson, Director, International Ocean Programmes, Oceanic and Atmospheric Research, United States National Oceanic and Atmospheric Administration (NOAA); and Dr. Sian Pullen, World Wide Fund for Nature (WWF).

192. **Mr. Bernal** addressed the issue of priorities in marine science and identified ocean and climate, ocean ecosystem science and marine science for integrated coastal area management (ICAM) as priority areas. He stressed that in marine science supply was serving demand and that the current and new priorities were defined by the supply-demand nexus.

193. The driving forces behind science relating to ocean and climate are the needs to understand climate change and to mitigate the effects of climate change. In understanding climate change, the important issues are seasonal and inter-annual forecasting, studying long-term effects on marine ecosystems and investigating the integrity of the life-support system on earth, of which oceans are an integral part. Climate change, manifested in sea-level rise, El Niño and La Niña type oscillations and increased occurrence of extreme events, can have devastating effects on society and the economy, mitigation of which is an urgent need.

194. Mr. Bernal gave examples of societal impacts of the 1997/98 El Niño, which included human fatalities, health risks, property damage, damage to crops, food shortages, water shortages and disruption in a number of sectors such as energy, transportation and tourism.

195. Mr. Bernal then stated that marine science was in the verge of moving from the current priorities focusing on the physics of the oceans to the new priorities which emphasized the chemistry and the biology of the oceans.

196. Ocean ecosystem science is driven by a number of factors, including dependence of a significant part of the world's population on the ocean ecosystem for its livelihood and food security. Other important engines of ocean ecosystem sciences include the need to study the effects of intensive and extensive exploitation as well as the accumulated effects over time and combined effects over sectors.

197. The current priorities of ocean ecosystem science include ecosystem-based fisheries management, land/ocean interface and coral reefs and other critical habitats. One example of this is the Global Ocean Ecosystem Dynamics (GLOBEC) project, which studies the effects of large-scale shifts in ocean regimes. In fisheries, ecosystem-wide multiple-species changes in population are found which appear to be

attributable to certain environmental phenomena, in addition to the direct fishing activities of man. Mr. Bernal identified the following new priorities of ocean ecosystem science: the control and regulation of ecosystems; the identification and quantification of structural ecosystem changes, including valuation of ecosystem services; and ecotoxicology.

198. Marine science for ICAM is driven by management-oriented needs. It is estimated that by 2020 75 per cent of the world's population will live near the coasts. Sixteen out of the world's 23 mega-cities are situated on the coast and the uses of the coasts by a number of industries, especially tourism, are growing. The priorities in marine science for ICAM are to increase the knowledge base at the localized level and to enhance local capacities. The local knowledge base includes information about the typology of coasts, the dynamics of sediment movements, including erosion, local current systems and local and regional bioproductivity regimes.

199. Mr. Bernal concluded his presentation by providing information about a global web service on ICAM (http://www.nos.noaa.gov/icm), a cooperative effort of IOC, UNESCO, the World Bank, the NOAA National Ocean Service and the Center for Marine Policy of the University of Delaware, in conjunction with a number of other partners around the world. The service is aimed at providing timely and accurate information on developments and advances in ICAM at the global, regional and national levels.

200. **Mr. Skjoldal** discussed marine ecosystems and the appropriate approach to their management. Marine ecosystems are open and subject to weather and climate patterns; their components are interlinked; and they face impacts of multiple human activities.

201. Mr Skjoldal provided examples of both long-term and short-term effects of ocean climate on fish populations and demonstrated that certain distinctive patterns emerge in different marine ecosystems. Presenting statistics on the populations of various species in a given marine ecosystem, he showed how the levels and fluctuations in populations of different species, especially in the food chain, are interlinked and how the distribution of various species is disturbed, implying a loss of integrity of the ecosystem.

202. The interlinkages, combined with the multiplicity of human activities which have varying impacts on the interlinkages, necessarily call for an integrated approach in studying the marine environment. In the view of Mr. Skjoldal, an ecosystem approach can achieve the desired integration in management. He provided the definition used by ICES for an ecosystem approach to ocean management: integrated management of human activities based on knowledge of ecosystem dynamics to achieve sustainable use of ecosystem goods and services and maintenance of ecosystem integrity. He then provided a framework for an ecosystem approach to ocean management: ecosystem objectives are to be defined; monitoring and research, and thereafter integrated assessment of the findings are to be carried out, advice is to be provided based on such assessment; and such advice can be used to adapt management practice geared to the achievement of the ecosystem objectives. Science is the basis of the whole framework. All major stakeholders are to be involved in the management exercise. He cautioned, however, that a major challenge was to maintain the objectivity and integrity of science in the face of demands from various stakeholders.

203. Mr. Skjoldal then considered the issue of environmental assessment, the main challenges of which are, first, to separate anthropogenic influence from natural variability, and then to distinguish the effects of different human activities. The recent Quality Status Report (QSR) of the OSPAR Commission was an excellent example of environmental assessment meeting the above challenges.

204. After a demonstration of fish stocks' close connections with and adaptations to ocean circulation, he stressed the importance of ecosystem monitoring and assessment. An ecosystem is defined as a dynamic complex of plant, animal and organism communities and their non-living environment interacting as a functional unit. A large marine ecosystem (LME) is an extensive region, typically larger than 200,000 sq km, with a unique hydrographic regime, submarine topography, productivity and trophically dependent population. On the global scale, the crucial factor is climate variability and change; on the LME scale, resources, especially biological resources, and physical environmental aspects are most important; on the local scale which is also relevant for ICAM, it is the land/ocean interaction and habitats, including effects of contaminants, eutrophication, microorganisms,

mariculture, spatial use and physical disturbances, that are of primary importance.

205. Mr. Skjoldal concluded by providing elements of a plan of action for an ecosystem approach to management. The prerequisite of international coordination and cooperation was national coordination and cooperation. The elements of a plan of action included: a stronger international cooperation; use of GOOS as a core element; coordination between GOOS and international research programmes; and execution of selected LME test cases. Such test cases would involve combined monitoring and research, transferable experience and results, and training and capacity-building.

206. **Dr. Li** addressed the issue of developing marine science and technology to promote sustainable development. The twenty-first century was described as an era for the oceans, when man will devote greater effort to understand, develop and protect the oceans and the oceans will play a more important role in the development of human society and the economy. Marine science and technology will play an essential role in enhancing man's knowledge of the natural processes of the ocean; it can provide a rational basis for decision-making on sustainable development, can help to improve integrated coastal management, can improve the utilization of marine resources and can provide effective means for the protection of the marine environment and for the conservation of marine resources.

207. Dr. Li enumerated the achievements of the United Nations system in promoting marine science and technology; among them were UNCLOS, chapter 17 of Agenda 21, the Commission on Sustainable Development and its decision 7/1; the programmes of the organizations of the United Nations system and the work of the Consultative Process.

208. He then offered certain suggestions for the work of the United Nations system in the field of marine science and technology: (a) formulating guidelines for the development of marine science and technology geared to the social, economic and environmental goals at the global level; (b) encouraging States to formulate laws and regulations, compiling collections of existing laws, regulations and policies to that end, and providing training in formulating laws and regulations; (c) intensifying the role of the relevant organizations within the United Nations system responsible for marine science and technology matters in planning, guiding and coordinating global, regional and national marine scientific research projects — the functions of IOC should be further strengthened in this context; (d) improving the coordination between United Nations organizations responsible for marine science and technology matters and other ocean-related organizations, programmes and projects within the United Nations so as to avoid unnecessary overlapping and duplication and to improve utilization of available financial, human and material resources; (e) encouraging bilateral cooperation on the basis of equality and mutual benefit, especially cooperation between developed and developing countries; in regions with favourable conditions, encouraging multilateral cooperation on a regional basis; encouraging the establishment of joint research centres to study issues of common interest; and building joint virtual laboratories; (f) strengthening the Training, Education and Mutual Assistance (TEMA) programme of IOC; (g) developing practical and feasible plans for capacity-building to help developing countries: at present, capacities most urgently needed by most developing countries are those for marine scientific research, marine environmental observation and monitoring, marine resources survey and exploitation, and marine environmental protection; capacity-building in developing countries may be improved by the creation of marine scientific research centres provided with the necessary equipment, skills and expertise; demonstration centres may be established in countries where favourable conditions exist; and (h) promoting the transfer of marine science and technology, especially from the developed countries to the developing countries; preparing marine technology transfer plans and programmes and coordinating global and regional marine technology transfer activities in the spirit of UNCLOS; regular seminars or workshops should be held at the global level to provide a forum for discussing issues related to marine science and technology transfer and for exchanging experiences.

209. Dr. Li then described the marine science and technology activities of China with a view to stimulating the exchange of information and experiences among States. Since the 1980s, China's marine science and technology has developed rapidly, and major achievements have been made in the fields of coastal and ocean survey, oceanographic research, research and development and application of new and high ocean technologies.

210. In the new century, China's social and economic development will rely increasingly on the ocean; this will result in a growing level of activities of developing and utilizing marine resources and will exert great pressure on the marine environment. In order to rationally exploit marine resources and protect the marine environment, an important task will be to vigorously develop marine science and technology. To achieve sustainable development and to enhance the contribution of marine science and technology to its social and economic development, China will continue to implement various programmes. Efforts will be made to promote the development of marine high technologies, ocean-related appropriate technologies, basic oceanographic research and applied research so as to expedite the application of research results to marine and ocean-related operations and industries, to serve the rational exploitation of marine resources and effective protection of the marine environment and to ensure the safety of offshore operations.

211. Dr. Li concluded by enumerating the priority areas for China that will be closely connected with its economic and social development in the near future. These areas include observation, research and prediction of coastal natural hazards; integrated coastal area management; marine environment protection; mariculture and fishery; and utilization of seawater and desalination.

212. **Dr. Neureiter** and **Dr. Wilson** gave a joint presentation, Dr. Neureiter concentrating on marine science priorities from a developed country perspective, and Dr. Wilson on ARGO, operational oceanography and marine scientific research.

213. Dr. Neureiter stressed the importance of the concept of "science for development" for developing countries and of capacity-building in this context. Another emerging theme was the need for Governments to cooperate at the regional level to improve regional coordination in marine sciences and to assure that political decisions are based on sound science. For this, decision makers must be given the best available scientific information when making policy decisions. This presents a challenge, because scientific results are often interpreted by different groups in different ways. Also, often when decisions need to be made the supporting science is often incomplete.

214. The paradigm is now shifting from managing single species and maximizing yields of every species to the sustainable management of marine ecosystems. This requires the integration of scientific information from many disciplines, ranging from species abundance studies to physical and biological oceanography to the study of changes in habitat with the introduction of land-based pollutants. In that context, Dr. Neureiter stressed the importance of the draft International Plan of Action to Improve Status and Trends Reporting developed by the FAO Advisory Committee on Fisheries Research.

215. With regard to ocean observation systems, Dr. Neureiter stated that oceanography was maturing from the simple collection and description of observations to a real understanding of ocean processes which is close to achieving the ability to forecast events. Man currently has the capability to implement long-term, operational observing systems for the global ocean, comparable to those in operation for the atmosphere for the past 30 years.

216. A key element of marine scientific research is the ability to draw on a broad-based range of tools, including linking space-based and in situ observations. A common framework is needed to link these two techniques. In addition, recent innovations in ocean engineering and information technology are broadening man's ability to study the oceans and to use multiple layers of information to understand marine ecosystems. Cooperation is indispensable to these efforts, especially as one moves from physical oceanography to biological and chemical oceanography and the multidisciplinary approaches required to understand marine ecosystems. In this connection, Dr. Neureiter gave the example of the operational capability to collect in situ observations across the Equatorial Pacific, the El Niño/Southern Oscillation (ENSO) Observing System, a legacy of the decade-long Tropical Ocean and Global Atmosphere (TOGA) research programme. Together with data from satellites, the observations obtained have enabled an understanding of ENSO events, which allows one to forecast these events and anticipate their impacts. The TOGA/ENSO experience demonstrates how almost two decades of international cooperation in physical oceanography and meteorology have resulted in a forecasting capability of great societal and economic importance.

217. Turning to chemical and biological oceanography, Dr. Neureiter stated that the observation of chemical

and biological characteristics presented a greater challenge to the science community than the observation of physical ones.

218. Many programmes have been initiated to investigate biological and chemical problems. For example, the Global Coral Reef Monitoring Network assesses the health of coral reefs and has become a key tool in understanding the diverse effects of the human activities that are causing the global decline of coral ecosystems. The Harmful Algal Bloom programme, which studies eutrophication and plankton blooms, is critical to human health and local economies. Dr. Neureiter also cited the examples of GPA, the work of GEF on LMEs, and the Census of Marine Life.

219. He then emphasized that all of these programmes shared a common need for research, data collection, assessments, monitoring and the development of operational observations in the coastal oceans. The need for cooperation was underscored. Done independently, or without complementary approaches, each programme could implement components of its own observing system, resulting in a situation where the whole is less than the sum of its parts. Member States acting through the United Nations and its specialized agencies have a critical role to play: to facilitate, coordinate and set consensus standards for operational ocean observing systems. WMO/IOC is providing an organizational focus within the United Nations system for basin-scale physical observations. However, a similar organizational focus is needed for the inclusion of biological and chemical observations to address ecosystem issues, especially in the coastal regions. Cooperation could be facilitated through joint meetings, web sites, the publication of directories of specialists and regular regional reporting of priorities for incorporation in the Secretary-General's report.

220. Dr. Neureiter concluded by addressing the issues of capacity-building in developing countries. He emphasized that continuous consideration should be given about local capacity-building in every programme, every project and every organization. Only in this way will sustainable development be truly achieved on a global scale.

221. **Dr. Wilson** explained that drifting buoys currently collect global in situ observations at the sea surface, and surface and sub-surface observations are taken by vessels of opportunity along major shipping lanes. While satellites observe conditions at the sea surface globally, there is no comparable long-duration basin-scale capability, beyond the ENSO Observing System in the Equatorial Pacific, to observe sub-surface conditions spanning ocean basins.

222. IOC and WMO, working with UNEP and ICSU, have been leading the Global Ocean Observing System (GOOS). Their work is motivated by the premise that if everyone who had a need for ocean observations had his own independent observing system there would be duplication and gaps and there would be no means of integrating the resulting observations. GOOS is an effort to implement, by international consensus, complementary observing systems capable of meeting multiple needs, both in real time for operational users and in delayed mode for research. Complementary systems will facilitate the integration of observations, avoiding duplication and filling gaps, where the whole will be greater than the sum of the parts.

223. ARGO, the international programme to use 3,000 profiling floats to observe the upper ocean in real time, is one key in situ element of GOOS. These floats are oceanic analogues to the radiosondes used by meteorologists to profile the atmosphere. ARGO floats are programmed to drift at depths of 2,000 metres, rising to the surface every 10 days to observe temperature and salinity profiles. While briefly at the surface, they report their position and data to a satellite for relay to shore, and then sink to begin another 10-day cycle. They have a design life of about four years. ARGO has grown from 55 floats funded in 1999 to 525 in 2001. Global coverage by 2005 is anticipated, with a spacing between floats of 300 kilometres. The newly established Joint Technical Commission on Oceanography and Marine Meteorology (JCOMM) of IOC and WMO is to develop a consensus approach for the collection, distribution and archiving of marine observations, both atmospheric and oceanic. By providing an organizational focus within the United Nations system, JCOMM will help ensure the availability of consistent sets of observations to support research.

224. ARGO features a full and open data policy, a policy also in place for surface drifting buoys, volunteer observing ships and the ENSO Observing System. Under it, there will be no period of exclusive use, and all data will be available to meet the needs of both operational agencies and the research community, thus bringing potential benefit to all. For example, the sharing of ARGO float data will facilitate new global-

scale research into an understanding of the coupled ocean/atmosphere system, extending well beyond the discipline of oceanography. At the same time, the availability of real-time ARGO data will lead to improvements in operational climate forecasts by national meteorological services. Finally, the development of new sensors by the research community will enable the collection of chemical and biological observations from ARGO profiling floats.

225. Countries can be involved in the ARGO project in a number of ways: by helping in the deployment of ARGO floats; helping to implement complementary in situ observing systems; using ARGO data for research and operational demonstrations; and deriving benefit from improved operational forecasts.

226. Looking to the future, ARGO is one of a number of systems that collect routine, long-term observations of the oceans. Another such system is a set of time-series stations for collecting integrated observations at fixed sites. With their full and open data policy, these observing systems are changing the way oceanography is practised, enabling the development of a broader understanding of the interplay between the physical, chemical and biological components, and of how the oceans function as a system.

227. **Dr. Pullen** addressed the issue of targeting marine science and technology to develop an ecosystem-based approach for the protection and sustainable development of the marine environment. She highlighted the recommendations of WWF to the parties to UNCLOS and explained the rationale behind them. The recommendations are as follows:

(a) Adopt an integrated and multidisciplinary ecosystem-based approach to the management of the seas and oceans;

(b) Manage activities and demands, by using marine science and technology to assess the resources, make decisions about the management of the use of resources and apply and enforce the management tools;

(c) Promote regional cooperation in applying the ecosystem approach across national borders and establish political frameworks (e.g., joint declarations) to facilitate such cooperation;

(d) Integrate the ecosystem approach across sectoral and intersectoral policies, plans and programmes, including national biodiversity strategies and action plans and national strategies for sustainable development;

(e) Promote integrated, international monitoring and assessment programmes; the urgency with which these are required has accelerated owing to the rate of change in the environment and associated socio-economic factors as a result of climate change;

(f) Target research and technical development to improve the management of marine resources, especially in fields where there are linkages between science, technology, social welfare and economics;

(g) Invest effort and resources to restore the marine environment, both as a means of protecting biodiversity in its broad sense and as an investment in the future sustainable economics of a region;

(h) Facilitate inter-agency coordination and support on a regional basis to provide sufficient information and appropriate technology to enable management measures to be implemented in a timely fashion and adequately enforced; in particular, mechanisms should be examined which would afford protection to threatened high-seas areas outside of exclusive economic zones;

(i) Apply the precautionary principle, as agreed at the United Nations Conference on Environment and Development, to focus scientific research and technology development on aspects and regions to prevent environmental and social degradation before it occurs;

(j) Adopt a strategic, applied programme of research that responds promptly to the needs of decision makers;

(k) Encourage forums in which specialists in fields including natural resources, social sciences, economics and legislation can interact and forums in which participants from developing and developed countries can share their perspectives and priorities for future research and development;

(l) Establish a task force that includes members from United Nations agencies, Governments, intergovernmental organizations, non-governmental organizations, and academic institutions to develop specific proposals for research and development in line with recommendations from the current meeting of the Consultative Process; such a task force would need to

include specialists in the fields of natural resources, social sciences, economics and legislation.

Scope of marine science programmes

228. The discussion that took place after the presentations focused on marine science programmes, priority in marine science and the linkage among different fields. Many delegations recalled the importance of marine science for sustainable marine development in order to ensure food security, alleviate poverty, foster economic prosperity and provide disaster prediction, prevention and mitigation.

229. With regard to future marine science and technological programmes, it was suggested that rigorous review processes of existing programmes, such as the Intergovernmental Panel on Climate Change, should include questions related to the extent to which the objectives of the programmes or projects were being achieved. In that connection, simple considerations such as how many people were trained and whether they were usefully deployed would allow measurement of the effectiveness of capacity-building.

230. Many delegations underlined the fact that ocean management decisions should draw upon well-documented scientific and technical information. In that regard, it was important to ensure quality control and quality assurance of data across programmes so that data might be safely integrated for better management decisions. The delegations also highlighted the need to strengthen the link between marine scientific research and policy-making institutions. There was a need for sustained long-term marine environment observation and monitoring programmes, which were essential for an enhanced understanding of global changes, thus leading to the improvement of the scientific basis for policy-making.

231. Other delegations emphasized that the protection of the marine environment, as well as an integrated approach to coastal management, were important elements that must be part of any marine scientific research programme and objective.

232. Delegations cited a number of existing programmes which were effective and encouraged wider participation in them. Those programmes could also be models for programmes to be developed in the future. In that connection mention was made of GOOS and also its ARGO project; SEACAMP (South-East Asian Centre for Atmospheric and Marine Protection) and the WIOMAP (Western Indian Ocean Marine Applications Project), two major WMO-IOC regional cooperative programmes, currently under development, the aims of which would be to coordinate the enhancement of marine observing systems, modelling capabilities and services based on cooperation among interested agencies and institutions; and the GEF Regional Baltic Sea Project, a case study for the large marine ecosystem approach using the riparian countries of the Baltic Sea and a joint project by HELCOM, ICES and the International Baltic Sea Fishery Commission (IBSFC).

233. Several delegations pointed out that, with respect to climate change, GOOS should be implemented in a balanced manner. To that end, opportunities must be created to enable developing countries to participate fully in scientific research and monitoring programmes such as GOOS.

234. Other delegations still had questions about how the developing countries in particular could benefit from GOOS and all its mechanisms of observation of the oceans. Many developing countries were still facing basic problems such as limited electricity resources which would impede their use of sophisticated technology, including, inter alia, their access to data via computers, their ability to advance beyond the former system of VMS, which basically relied on the integrity of the ship captain and the owner of the vessel and their access to satellite imagery systems, which provided information directly. It was suggested that specific ocean programmes for development might be needed. It was also pointed out that without an analysis of training needs, there could be no effective and relevant programme of capacity-building.

235. With regard to capacity-building, some delegations stated that there was a need to pay greater attention to investing in people, training, development of the appropriate skills and providing means for the retention of trained and skilled people in developing countries.

Priorities in marine science

236. With regard to priorities in marine science, the representative of WMO suggested that it was important to develop modalities for the close interaction of various marine disciplines. The Conference on Oceans and Coasts, to be organized by IOC and other

organizations in Paris in December 2001, in the run-up to the World Summit on Sustainable Development, would provide a good opportunity for such interaction between various marine scientific disciplines. Many of the presentations would focus on different aspects of marine scientific research.

237. Many delegations pointed to the importance of adopting an integrated ecosystem approach for the management of ecosystems and for the marine environment in general. Such an approach would include the involvement of various sectoral users of a specific ecosystem to identify and put in place specific arrangements for the sustainable use and protection of the ecosystem. There was a need for reliable, relevant and available scientific information to support that approach. Another important consideration would be to specifically address the role of science in risk-based decision-making and the operational application of the precautionary approach.

238. Many delegations called for a better understanding of the interaction between the oceans and the atmosphere and its implications for climate change. Such knowledge would be aimed at enhancing and adapting the capacity of countries to handle information and respond to the negative impacts of climate change.

239. Many delegations listed as priorities the following issues: ways of controlling and preventing unsustainable patterns of fisheries; necessity of carrying out environment impact assessments in fragile marine environments for the implementation of potentially dangerous projects; study of pollution in oceans and seas and its impact on freshwater resources; impacts of pollution on fragile ecosystems, in particular closed and semi-enclosed seas; impact of ballast water, dumping of wastes, hazardous wastes, radioactive and chemical wastes in oceans and seas on marine living and non-living resources; marine pollution in coastal areas and its effects on agriculture; and crisis management in emergency situations.

240. Several delegations pointed to the potentials of the increased utilization of non-living resources of the seabed. It could be considered crucial for its future international strategies and international as well as national coordination programmes of marine scientific research to be developed not only with an interdisciplinary focus but also with a focus on the integrated goals of the sustainable use of the common heritage of mankind.

241. In the view of some delegations, the high seas contained a significant biodiversity which was as yet poorly known. For example, while 40 per cent of the species from seamounts were known, specialists had indicated that there were a significantly greater number of species yet to be discovered. The ecological dependencies and the role of those species and systems were even more poorly understood. In that context, support should be given to the Census of Marine Life to be undertaken by the United States and others. In addition, there was a need for an improved and coordinated scientific focus on identifying and managing risks to biodiversity and the environment of the high seas, which would lead also to the adoption of improved management mechanisms, including the use of the precautionary approach.

242. Many delegations recognized the danger posed by marine pests introduced into the marine ecosystems, both in terms of their productivity for human use and their intrinsic integrity. Recent estimates indicated that over 3,000 non-native species were being moved around the world daily in shipping and other means. A key requirement for the international management of ballast water introduction was an international framework that would include the following considerations: sharing of information on pest distribution and impacts; the scientific vetting of proposed ballast water treatment options; and helping to set internationally acceptable standards for ballast water cleanliness.

243. Many delegations were of the view that the consideration of issues of the underwater cultural heritage and the continental shelf belonged in different forums and therefore they were not deemed relevant to the discussions of the Consultative Process.

Linkages among different fields

244. In response to the questions posed in the annotated agenda and format (A/AC.259/L.2, appendix I, para. 31) regarding the strengthening of the linkages between different fields of marine scientific study and linkages between the study of the marine environment and the study of social and economic factors, many delegations proposed the following:

- Strengthening coordination at the international level, as well as the inter-agency level, with the

aim of avoiding duplication and streamlining the activities in different forums;

- Strengthening UNEP regional seas programmes through further cooperation with relevant international organizations;
- Establishment of centres for dissemination of information on marine scientific research and technology;
- Strengthening GEF and other financial institutions with a view to enabling them to actively finance capacity-building projects in developing countries, in particular in the areas of: (a) controlling and reducing pollution in oceans and seas, especially in fragile ecosystems like closed and semi-closed seas; (b) coastal cities waste management and recycling projects; (c) controlling and reducing the pollution from shipping, dumping of hazardous and radioactive wastes, as well as chemical wastes and other harmful substances; and (d) carrying out environmental impact assessments for projects which are potentially harmful to the marine environment;
- Implementation of joint projects between regional organizations of the UNEP regional seas programme and other relevant international organizations;
- Encouraging, at all levels, the steps necessary for an effective and coordinated implementation of UNCLOS and Agenda 21.

(b) Discussion Panel B: Coordination and cooperation in combating piracy and armed robbery at sea

245. The discussions in Panel B on coordination and cooperation in combating piracy and armed robbery at sea were led off by presentations from the following representatives: Mr. E. E. Mitropoulos, Assistant Secretary-General/Director, Maritime Safety Division, International Maritime Organization; Mr. J. Abhayankar, Deputy Director, International Maritime Bureau, International Chamber of Commerce; and Mr. H. Sato, Director of the Ocean Division, Ministry of Foreign Affairs of Japan.

246. **Mr. Mitropoulos** in his presentation pointed out that in addition to piracy and armed robbery, other unlawful acts under consideration in IMO included unlawful seizures of cargo and other forms of maritime fraud, terrorism at sea, illicit drug trafficking, stowaway cases and illegal transport of migrants by sea.

247. He said that piracy and armed robbery had consistently figured on the agenda of the IMO Maritime Safety Committee (MSC) since 1984. A number of IMO Assembly resolutions and MSC circulars had been adopted, but as statistical information received demonstrated, there had been a considerable deterioration of the situation in the Malacca Strait, the South China Sea, the Western/Central African region, parts of the northern area of Latin America and the Caribbean, and parts of the Indian Ocean.

248. Mr. Mitropoulos provided information on past efforts by IMO to assist countries most affected by acts of piracy and armed robbery against ships, for example, the dispatch of an IMO working group to Malaysia, Singapore and Indonesia in 1993 to report on the situation in the Malacca Strait; and an IMO mission to China, Hong Kong and the Philippines in 1994 to study the situation in the South China Sea. Following those missions, a significant improvement had been experienced, albeit temporarily. In 1998, MSC had launched an anti-piracy project comprising a number of missions of experts and seminars/workshops in countries in the South China Sea and the Malacca Strait and in Brazil; followed by a regional seminar and workshop for the Latin American and Caribbean region, held in Brasilia in October 1998; a regional seminar and workshop for the South-East Asia region, held in Singapore in February 1999; a mission of experts to Abuja, followed by a regional seminar and workshop for the West and Central African region, held in Lagos in October 1999; and a regional seminar and workshop for the Indian Ocean region, held in Mumbai, India, in March 2000.

249. Unfortunately, he noted, the completion of the 1998 anti-piracy project had not coincided with any significant improvement of the situation; on the contrary, the situation had worsened and this had caused grave concern to MSC, which, at its seventy-second session in May 2000, had decided, subject to the availability of funds, that a number of assessment missions should be undertaken to countries bordering waters where pirates and armed robbers continued to operate unabated.

250. The purpose of this new IMO effort (phase 2 of the anti-piracy project) was: (a) to evaluate the actions taken by the invited Governments to implement the IMO recommendations to prevent and suppress acts of piracy and armed robbery against ships within areas of their jurisdiction; (b) to receive information on the measures the national authorities of the participating countries had put in place for the purpose of implementing at the national level the recommendations of the IMO regional seminars and the workshops held within the 1998 anti-piracy project as well as those contained in revised MSC circulars 622 and 623; (c) to identify where such measures had not been successful and what had impeded their implementation; (d) to explain the reasons behind any total or partial inability to implement the measures; (e) to seek information on any ideas/proposals the participating Governments might have with respect to regional cooperation for the purpose of combating piracy and armed robbery against ships (for example, joint or coordinated exercises, patrolling of particular vulnerable sea areas, exchange of intelligence on moves of pirates/armed robbers); and (f) to specify ways in which IMO could assist in overcoming any difficulties the participating countries had encountered in the process.

251. The first such mission had been dispatched to Jakarta from 13 to 14 March 2001, and a regional meeting had been held in Singapore from 15 to 16 March 2001, which was attended by representatives from countries that were experiencing extensive piracy in waters off their coasts. The States participating in the Singapore meeting either: (a) could play a substantial role in addressing the problem by virtue of their strategic location vis-à-vis the most affected areas, stretching from the South China Sea to the Malacca Strait to the Eastern Indian Ocean; or (b) had a genuine interest in seeing the problem effectively addressed because of the large number of ships under their national flag using the waters concerned.

252. The mission to Jakarta and the meeting in Singapore had been undertaken against a backdrop of a deteriorating situation with respect to piracy and armed robbery. In the Malacca Strait, the situation had dramatically worsened, with 75 attacks reported during 2000, as opposed to 2 incidents in 1999.

253. The number of acts of piracy and armed robbery against ships in 2000, as reported to IMO, was 471, an increase of 52 per cent over the figure for 1999. The total number of incidents of piracy and armed robbery against ships reported to have occurred from 1984 to the end of April 2001 was 2,289. During the period March 2000-March 2001, as compared to 1999, in the Mediterranean Sea the number of reported incidents had decreased from 4 to 2, while in West Africa there had been a decrease from 36 to 33. On the other hand, the number of incidents had increased from 37 to 112 in the Malacca Strait, from 136 to 140 in the South China Sea, from 51 to 109 in the Indian Ocean, from 16 to 29 in East Africa and from 29 to 41 in Latin America and the Caribbean. Most of the attacks worldwide were reported to have occurred in the territorial waters of coastal States while the ships were at anchor or berthed. During the same period, 72 crew members had been killed, 129 had been wounded and five reported missing. One ship had been destroyed, two ships had been hijacked and three ships had been reported missing.

254. The Singapore meeting identified the following main problem areas (not applicable in all participating countries): the continuing adverse economic situation prevailing in certain parts of the region; the geographical configuration of certain countries; the resource constraints on law-enforcement agencies; the lack of communication and cooperation among the various national agencies involved; the delayed response time after an incident had been reported to the coastal State concerned by affected ships; general problems of incident reporting, such as alerting the nearest coastal States and other ships in the area of a ship under attack or threat of attack; the prosecution of pirates and armed robbers when apprehended; and the lack of regional cooperation.

255. Mr. Mitropoulos said that the Singapore meeting had agreed upon a number of recommendations, which he believed IMO would consider when MSC met in May 2001. The meeting had recommended that participating Governments identify, on the basis of experience and statistical information, vulnerable areas off their coasts and in their ports and direct their resources to cope with the increased risks to safe navigation and environmental protection in such areas, with particular emphasis on areas used by international shipping; and provide specific advice for ships on protective measures and local reporting procedures. The participants identified focal points in their respective administrations for the exchange of information and coordination of efforts in the fight

against piracy and armed robbery in the region. The effectiveness of coordinated patrols and joint exercises, where appropriate, to test existing anti-piracy systems and strengthen cooperation among neighbouring countries in their efforts to eradicate piracy and armed robbery against ships in their waters had been recognized and encouraged. Governments were encouraged to continue and further strengthen regional initiatives, such as the 2000 Tokyo conferences and the follow-up meeting in Kuala Lumpur.

256. Governments in the region which had not yet done so were encouraged to ratify the 1988 Convention for the Suppression of Unlawful Acts against the Safety of Navigation (SUA Convention) and the 1988 Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf (the SUA Protocol) to consider doing so. Currently there were 52 States parties to the 1988 Convention, representing 48 per cent of the world tonnage; and 48 States parties to the Protocol.

257. Furthermore, the industry was encouraged to ensure that all attacks or attempted attacks were reported promptly to the nearest Rescue Coordination Centre as well as the designated focal points of the coastal and flag State concerned. Concern was expressed at the lack of reporting to IMO by flag States on most instances of attacks or attempted attacks on their ships and MSC was invited to urge all flag States to make such reports in accordance with the relevant IMO instruments.

258. The meeting also invited the Secretary-General of IMO to undertake consultations with Governments in the region for the purpose of convening, at an appropriate time, a meeting to consider concluding a regional agreement on cooperation against piracy and armed robbery against ships.

259. Participating Governments lacking the necessary expertise and associated resources were encouraged to seek technical assistance from IMO in order to improve their capabilities to prevent and suppress piracy and armed robbery against ships in their waters.

260. Mr. Mitropoulos explained that other IMO activities regarding the combating of piracy and armed robbery included the preparation of a draft Code of Practice for the Investigation of the Crimes of Piracy and Armed Robbery against Ships for submission to the IMO Assembly at its twenty-second session in November 2001.

261. Member Governments were invited to use the Code when arranging for investigations into the crimes of piracy and armed robbery against ships to be conducted under their jurisdiction. He noted that the draft Code provided a definition of "armed robbery". IMO was also working on the prevention of the registration of "phantom ships".

262. In conclusion, he stated that IMO would like to see the Consultative Process increase awareness of the problem of piracy and armed robbery; motivate the political will to act; build a consensus position and shape a uniform policy to prevent and suppress acts of piracy and armed robbery; and sensitize countries in areas affected to act and others in a position to assist or provide resources to do so.

263. **Mr. Abhayankar** in his presentation said that pirates today generally fell into two categories: poor, opportunistic people; and professional pirates. Both types were usually armed and difficult to apprehend. He pointed out that pirates did not hesitate to murder the crew, often with extreme brutality, as had been the case with the crew of the *MV Erria Inge*.

264. He said that in 2000, the highest number of acts of piracy had been recorded. The trend was continuing in 2001: as at the end of April, the number of reported incidents had approached 100. At the same time, it was to be noted that only one in three attacks was actually reported. There had been an increase in the number of incidents, especially in the Malacca Strait, and also in the Red Sea, where there had been 13 incidents so far, compared with none in 1999. A comparison of statistics of incidents reported to the International Maritime Bureau during 1999 and 2000 showed a total number of attacks reported in 2000 of 469, representing a 56 per cent increase over 1999; 15 crew members killed in 2000, as opposed to 3 in 1999; and 8 ships hijacked in 2000, as against 10 in 1999.

265. Mr. Abhayankar described some common features of what he termed "maritime mugging", which accounted for 85 per cent of the incidents: the target of most attacks would be cash and valuables. Vessels were boarded in port, at anchorage or steaming, and attacks lasted from 30 to 60 minutes, during which time the ship usually was not under command. Pirates were armed, but not necessarily organized. Violence was employed mainly if the crew resisted. Regions or particular countries most affected were South Asia, South-East Asia, the Far East, West Africa and Brazil.

266. The common scenario of a cargo or ship hijacking was described by Mr. Abhayankar as follows: the target of the attack would be the entire cargo or the ship; the ship was boarded at sea by heavily armed pirates; the attacks lasted several days; violence was used and the crew was locked up or killed; and organized criminal syndicates were involved. Such incidents, of which there were about 12 annually, were predominant in South-East Asia or the Far East.

267. He then enumerated the major hijackings that had taken place between 1998 and 2000 and provided a detailed account of the hijacking of the *Alondra Rainbow* in October 1999 and its subsequent recovery by the Indian authorities. One of the highlights of that incident had been the name changes that the vessel had undergone in attempts to conceal its identity. The pirates had painted new names over the original name of the vessel, but when the vessel was brought into port by the Indian authorities and the paint was removed, the true identity of the vessel was revealed. To thwart such activities in future, the International Maritime Bureau had proposed that an IMO identification number be welded onto vessels.

268. He outlined some of the legal issues arising from the typical hijacking of a vessel. Problems of jurisdiction might arise in situations where UNCLOS had not been ratified or was not applicable, the State concerned was not a party to the SUA Convention or there was no provision in the national legislation on piracy. In such cases one possibility might be to try the offenders under *jure gentium*. In the area of investigations, possible issues might centre on the number of countries involved or the expertise and the costs involved — which in the case of the *Alondra Rainbow* had been borne by India, the intercepting State. The possibility of such a burden might discourage States from becoming involved in preventing and suppressing acts of piracy and armed robbery at sea. With regard to the prosecution of the offenders, he pointed out that in these types of criminal matters the degree of proof required was high. Mr. Abhayankar underscored the paramount importance of enacting appropriate national legislation.

269. He emphasized that piracy was responsible for bringing about physical and psychological trauma for the crew, monetary loss and threats to the marine environment. He made the following recommendations for combating piracy: (a) preventive measures by the crew — the IMO circulars provided excellent guidance in that respect; (b) industry initiatives — establishment of a piracy reporting centre in Kuala Lumpur financed by shipowners and the Protection and Indemnity (P&I) Clubs; (c) application of the model law developed by the Comité Maritime International (CMI), which might be of assistance in answering some of the problems; (d) use of technology — tracking devices cost less than US$ 300 per month and could be hidden on board a ship; (e) a proactive approach by coastal and flag States — for example, if a coastal State were unable or unwilling to prosecute pirates, the flag State should have a role to play; (f) regional cooperation — joint patrols had proved to be a deterrent; (g) intergovernmental involvement — IMO had done an excellent job, but it might be useful to have some law enforcement involvement at the intergovernmental level. He did not recommend the use of arms by the crew or the use of armed guards providing security. In conclusion, he raised the question of whether an international task force was needed.

270. **Mr. Sato**, in his presentation, noted that Asian waters, particularly the South China Sea and the Malacca Strait, had been affected severely by piracy and armed robbery against ships. Over the past two years, Japan had been doing its utmost to promote global as well as regional cooperation in dealing with the problem of piracy.

271. With regard to cooperation at the global level, he said that, firstly, Japan felt it was taking effective steps to combat piracy by taking up the problem at international forums, such as the United Nations General Assembly and the Consultative Process. In doing so, it was demonstrating the political will to fight piracy as well as heightening public awareness of the issue. Secondly, his country appreciated and supported the efforts undertaken by IMO, as demonstrated, for example, in Japan's participation in the correspondence group on the IMO draft Code of Practice for the Investigation of the Crimes of Piracy and Armed Robbery against Ships as well as in the IMO Regional Expert Meeting on Combating Piracy and Armed Robbery against Ships held at Singapore in March 2001. Thirdly, he said, Japan would also continue to make efforts to urge States to become parties to the SUA Convention and its Protocol, and to ensure its effective implementation.

272. In connection with regional cooperation, Mr. Sato said that in response to the proposal made by former Japanese Prime Minister Keizo Obuchi at the Summit

Meeting of Japan and the Association of South-East Asian Nations (ASEAN) in November 1999, Japan had held the Regional Conference on Combating Piracy and Armed Robbery against Ships at Tokyo, in April 2000, in which 17 countries had participated. The Conference had adopted three documents, namely the Tokyo Appeal, a Model Action Plan and "Asia Anti-Piracy Challenges 2000".

273. The Tokyo Appeal proposed the establishment of contact points for all maritime-related concerns as well as the elaboration of action plans for combating piracy and armed robbery against ships, in particular a plan for strengthening the self-defence capability of private ships. The Model Action Plan contained more concrete measures based upon the proposals put forward in the Tokyo Appeal.

274. The paper entitled "Asia Anti-Piracy Challenges 2000" provided guidelines for facilitating regional cooperation on combating piracy and armed robbery against ships and proposed such measures as: information exchange among coast guard authorities; mutual cooperation in dealing with unlawful activities; technical cooperation to enhance the individual capability of coast guard authorities; and the continuous holding of expert meetings.

275. As a follow-up to the Conference, Japan had dispatched a mission to the Philippines, Malaysia, Singapore and Indonesia in September 2000 to consult with the Governments concerned about concrete measures aimed at implementing the proposals enunciated at the Tokyo Regional Conference. As a result of those consultations and bearing in mind the mutual cooperation proposed in "Asia Anti-Piracy Challenges 2000", the Japanese Coast Guard had conducted joint exercises with India and Malaysia. The exercises covered areas of communication, search and rescue, interception and boarding. A further joint exercise with the Indian Coast Guard was to be held in May 2001 in Japan.

276. At the Regional Experts Meeting on Combating Piracy and Armed Robbery against Ships, held at Kuala Lumpur in November 2000, Japan had expressed its willingness to accept students from the Asian region at the Japan Coast Guard Academy starting in April 2001. Mr. Sato stated that students from Thailand, Viet Nam, Malaysia, Indonesia and the Philippines had already enrolled at the school.

277. Japan would also be holding a Maritime Law Enforcement Seminar in 2001, where participants would be provided with the knowledge, skills and techniques for planning, conducting and supervising maritime law-enforcement activities.

278. Mr. Sato recalled that at the "ASEAN + 3" (Japan, China, Republic of Korea) Summit Meeting in November 2000, Prime Minister Mori of Japan had proposed holding an Asian Cooperation Conference on Combating Piracy and Armed Robbery against Ships in 2001, again to be held in Japan. Issues proposed for the conference included information exchange, the future direction of regional cooperation and capacity-building.

279. He summarized the main problem areas with respect to piracy and armed robbery at sea as: (a) the lack of communication and cooperation among the various national agencies involved within individual countries; (b) the response time after an incident has been reported to the coastal State concerned by affected ships; and (c) general problems of incident reporting. It was the view of Japan that the solution to these problems lay in the improvement of the system of information exchange.

280. In order to address other problems, including the timely and proper investigation of reported incidents, the prosecution of pirates and armed robbers when apprehended and the lack of regional cooperation, it was necessary to strengthen regional cooperation among the maritime law-enforcement authorities of the countries concerned.

281. A third set of problems included: the continuing adverse economic situation prevailing in certain parts of the region; the geographical configuration of certain countries; and the resource constraints on law-enforcement agencies. Mr. Sato pointed to capacity-building as one possible solution to those issues.

282. In the discussions that followed the presentations by the three speakers, the following points were raised.

283. Delegations, including those not currently affected by the problem of piracy and armed robbery, expressed concern at the recent dramatic increase in incidents of piracy and armed robbery at sea and the associated level of violence, particularly in South-East Asia and the Malacca Straits.

284. It was recognized that acts of piracy and armed robbery represented a serious threat to the lives of

seafarers, the safety of navigation, the marine environment and the security of coastal States. They also had a negative impact on the entire maritime transport industry, leading, for example, to increases in insurance rates and even the suspension of trade.

285. Several delegations noted that armed robbery, particularly repeated acts committed in the territorial seas of coastal States and in international straits, could threaten the rights of innocent passage and transit passage and, in archipelagic waters, the passage through archipelagic sea lanes, as enjoyed by all States under the United Nations Convention on the Law of the Sea. It was further noted that armed robbery also affected the management of ports.

286. Delegations highlighted the potential of an environmental disaster from an attack on a ship, particularly if a ship carrying hazardous cargo was left steaming with no one in command in a high-traffic area and/or a narrow waterway.

287. Delegations agreed that piracy and armed robbery at sea was a global problem, which in order to be combated effectively required action and cooperation at all levels. Acts of piracy and armed robbery against ships were characterized as international crimes that were often part of organized transnational crimes, which no State could combat on its own. This was particularly true in cases which involved so-called "phantom ships".

288. It was also noted that piracy and armed robbery should be seen in the larger context of illegal activities at sea, such as illicit traffic in narcotic drugs and psychotropic substances, the illegal transport of migrants and organized crime, which constituted a threat to international peace and security.

289. It was pointed out by several delegations that the flag State, the coastal State, the port State and the State of which the criminals were nationals had a particular responsibility to combat piracy and armed robbery. The importance of consistent and uniform measures in combating piracy and armed robbery at the regional and global levels was underscored.

290. Delegations recalled the duty of all States under article 100 of UNCLOS to cooperate to the fullest extent possible in the repression of piracy on the high seas and in any other place outside the jurisdiction of any State. In that connection, it was pointed out that the Convention only applied to piracy on the high seas or in areas outside the jurisdiction of States, while the majority of acts of violence against ships occurred in the territorial waters or ports of States while the ships were at anchor or berthed.

291. The importance of cooperation at the international level was raised by a number of delegations. They noted with appreciation the activities of IMO in order to prevent and combat piracy and armed robbery against ships. It was observed that while regional initiatives and activities should be strongly encouraged and supported, IMO should be recognized as the international organization with the primary mandate to deal with the problem of piracy and armed robbery at sea at the global level. Several delegations, concerned at the current under-reporting of acts of piracy and armed robbery and stressing the importance of reporting all incidents, proposed that IMO should be a focal point for receiving such reports.

292. Several delegations highlighted the importance of implementing the IMO guidelines on preventing attacks of piracy and armed robbery contained in the MSC circulars, as also called for by the United Nations General Assembly in its resolutions 54/31 and 55/7 on oceans and the law of the sea. Reference was also made to the recent circulation of the IMO draft Code of Practice for the Investigation of the Crimes of Piracy and Armed Robbery against Ships and the work of the IMO Subcommittee on Flag State Implementation in preparing a draft resolution to prevent registration of so-called "phantom ships". The draft texts were to be submitted to the IMO Assembly in November 2001 for adoption.

293. A number of delegations highlighted the importance of developing preventive measures with respect to phantom ships. Reference was made to a proposal from Hong Kong, China, to the forthcoming meeting of the IMO Maritime Safety Committee, that the IMO Ship Identification Number should be visibly welded onto the stern of all vessels required to possess an IMO number. It was proposed that States should transmit to IMO and flag States information they have on phantom ships and that IMO should establish a database of this information, which could be accessed by shipowners. It was also suggested that consideration should be given to increasing the onus upon flag States not to register stolen vessels. Furthermore, it observed that article 110 of UNCLOS provided a basis for boarding vessels flying questionable flags.

294. Several delegations expressed the view that more attention should be paid to the applications of current technology to vessel-tracking, e.g., the role that an Automatic Identification System could play in curbing criminality. It was suggested that home port verification should also be considered.

295. A number of delegations noted the valuable work carried out by the International Maritime Bureau of the International Chamber of Commerce in combating piracy and armed robbery and also the work of other organizations, such as Interpol, the International Chamber of Shipping, the Baltic and International Maritime Council, the International Transport Workers' Federation, the International Union of Marine Insurance and the International Group of P&I Clubs.

296. In a letter it had addressed to the Secretariat, the International Labour Organization emphasized the need to protect the lives of seafarers and to ensure that they were not deprived of the elementary and universal rights to freedom, security and dignity.

297. Reference was made to the work of the Comité Maritime International, particularly its elaboration of a model national law on piracy and maritime violence. Several delegations said that the work of CMI should be honoured. Piracy was truly a global problem which cut across all sectors of society. However, those delegations pointed out that, given the number of forums in which the problem was under discussion, there was a risk that it was being dealt with in disparate ways. Also, attempts to define criminal acts against ships not included in the definition of piracy in UNCLOS represented one area that needed further discussion.

298. Encouraging cooperation between States and relevant international bodies, several delegations pointed to the need for a global management regime, as well as to the need to ensure that measures taken by individual States were consistently enforced within the framework of international law. The World Bank, together with regional bodies and States, should support those measures, it was suggested.

299. Several delegations proposed that the World Maritime University should serve as the focal educational point at the global level and begin a more organized education campaign on the issue of piracy and armed robbery against ships. It was noted that the University already provided lectures on piracy, and that it could develop a seminar on piracy in which representatives of United Nations bodies could participate. Alternatively, a "professional development course", with the participation of maritime administrators from around the world, might be developed. Such courses would include the training of investigators of piracy and armed robbery against ships and might also serve as a contact point for representatives from those regions where the problem of piracy was most serious.

300. Also with respect to training, the United States stated that its Federal Bureau of Investigation was providing training, which could enhance regional efforts to combat piracy and armed robbery.

301. Many delegations underlined the importance of cooperation at the regional level, in particular among States in regions most affected by acts of piracy and armed robbery. The value of the IMO regional workshops and seminars and their follow-up was emphasized in that regard.

302. With a particular focus on the problem in South-East Asia, many delegations commended the holding of recent regional conferences and other cooperative initiatives among the States in the region. Reference was made to the 1976 Declaration of the ASEAN Concord and the 1997 ASEAN Plan of Action to Combat Transnational Organized Crime. The latter was described as constituting a milestone for combating piracy in the South-East Asian region. It put in place a cohesive regional strategy and facilitated information exchange among ASEAN member States, cooperation in legal and law-enforcement matters, institutional capacity-building, training and extra-regional cooperation. Other ongoing efforts in the South-East Asian region included the two high-level international conferences on combating piracy held at Tokyo in March and April 2000, the meeting of the ASEAN Regional Forum, held in India in October 2000, the Experts Meeting on Combating Piracy and Armed Robbery against Ships, held in Malaysia in November 2000, and the South-East Asian Programme in Ocean Law, Policy and Management (SEAPOL) Inter-Regional Conference on "Ocean Governance and Sustainable Development in the East and Southeast Asian Seas: Challenges in the New Millennium", held in Thailand from 21 to 23 March 2001, which devoted one of its sessions to piracy and law enforcement.

303. Several delegations pointed out that tangible progress had been made in the South-East Asian region

in terms of both deterrence and enforcement; cooperation had been intensified with neighbouring countries by increasing maritime patrol and equipment with greater use of satellite tracking vessel and monitoring systems. However, the States of the region still required the assistance and expertise of developed nations and relevant international organizations.

304. Several delegations were encouraged by the initiatives taken by ASEAN to combat acts of piracy and armed robbery and hoped that the outcome of the Consultative Process would help further consolidate such regional efforts. One delegation proposed that the issue of piracy and armed robbery could also perhaps be addressed within the framework of the organization for Asia Pacific Economic Cooperation.

305. Several delegations pointed out that serious consideration should be given by States sharing borders in areas threatened by piracy to establishing — preferably formal — bilateral/regional cooperation arrangements. Regional agreements would provide a legal framework for cooperation. In that regard, reference was made to the example of a draft regional agreement appended to IMO Circular 622/Rev.1. It was noted, however, that in drafting regional agreements, attention should be paid to the different characteristics of the various regions, as well as to their political environments. The ideal, therefore, would be to forge a consensus before calling on IMO's expertise in the elaboration of regional agreements.

306. One delegation noted that it was important for regional cooperative arrangements or agreements to be open not only to the States of the region, but also to other States with a substantial interest in navigation in the region. Capacity-building in law enforcement and sharing of expenses, etc., could be addressed within the framework of such arrangements or agreements.

307. Since acts of piracy and armed robbery could result in collisions or groundings, the importance of regional emergency plans in the event of a pollution incident was emphasized by several delegations.

308. It was noted by several delegations that flag States whose ships were sailing in waters affected by crimes at sea and were the targets of piracy attacks or armed robbery should make an increased effort to advise their ships on how to take precautions against those attacks. The importance of the IMO Guidance to Shipowners and Ship Operators, Shipmasters and Crews on Preventing and Suppressing Acts of Piracy and Armed Robbery against Ships (MSC Circular 623/Rev.1) and several other guidelines developed by other organizations or Governments were referred in this regard.

309. Several delegations expressed the view that IMO and other organizations should strongly discourage the carrying and use of firearms on board merchant vessels.

310. The importance of alerting other ships in the vicinity of an attack was highlighted as an important tool in combating piracy and armed robbery at sea. It was pointed out by IHO that the appropriate coordinator of the navigational warning service needed also to be informed of all actual and attempted attacks which took place in the area for which he or she was responsible under the IMO/IHO worldwide navigational warning service.

311. One delegation stressed that States which had information about facts or circumstances leading to a presumption that acts of piracy or acts against the safety of navigation might occur should provide information to the relevant States.

312. One delegation raised the issue of the effects of acts of piracy and armed robbery against ships on the level of insurance premiums that shipowners might be charged and the subsequent impact on the costs of transportation of goods and their delivery.

313. Delegations recognized the importance of action at the national level to combat acts of piracy and armed robbery. Many reported on steps they had undertaken to increase port security and strengthen their maritime enforcement capabilities, including through increased coordination among various national administrations and departments.

314. Some delegations stated it was imperative for Governments to consider taking the actions identified in paragraphs 209 to 223 of the report of the Secretary-General on oceans and the law of the sea (A/56/58), including: the development of national action plans for preventing an attack as well as steps to take in the event of an attack; augmenting surveillance; and enhancing port security.

315. Reference was made to the need for full cooperation between the coastal State and the flag State, including the role of the State in warning ships in the area where the attacks were likely to take place, in particular in cases of repeated attacks.

316. The importance of adequate charting of waters was highlighted in order, inter alia, to locate the hide-outs of pirates and armed robbers. In that connection, IHO pointed out that hydrographic surveying was very expensive.

317. Delegations agreed that the strengthening of the capacity of developing countries was intrinsically linked to improved efforts in the suppression of piracy and armed robbery against ships.

318. The importance of training for port personnel was stressed. The United States, referring to the current two-year course offered by the World Maritime University, said it would be in a position to fund requests for attendance by personnel from developing countries at the course if such requests were identified as a priority. In addition, the United States Coast Guard was available for instruction on law-enforcement tactics and port security measures and enhancements to member States. Member States were encouraged to send their personnel to the United States for training or, alternatively, the United States Coast Guard could send international training detachments to other States.

319. It was suggested that the World Bank and other donor agencies such as the United Nations Development Programme should give priority to requests for assistance from developing countries in addressing two major issues with respect to piracy and armed robbery at sea, namely enhancing enforcement capability and implementation of port security measures. One delegation stated that donor institutions should be encouraged to engage in a dialogue with developing countries to assess the needs identified to address piracy and report their findings to the Secretary-General.

320. Delegations noted that acts of piracy were by definition confined to the high seas or the exclusive economic zone and that not all of the attacks that took place in these maritime zones could be classified as traditional acts of piracy over which all States might exercise jurisdiction under the provisions of the United Nations Convention on the Law of the Sea.

321. It was noted that when attacks against ships occurred in port or at anchorage they were most likely proscribed and should be punishable by local criminal law. When acts endangered the safety of navigation and occurred on board foreign flag ships while under way in the territorial sea, in international straits or in waters beyond the limits of the territorial sea, those acts were frequently not proscribed or punishable by the criminal law of the coastal State. It was noted in that regard that the SUA Convention and its Protocol could fill many of the jurisdictional gaps. The SUA Convention required States parties to criminalize such acts under national law and to cooperate in the investigation and prosecution of their perpetrators.

322. One delegation recalled the draft ocean space treaty proposed by Malta in 1971 to the Committee on the Peaceful Uses of the Seabed and the Ocean Floor beyond the Limits of National Jurisdiction, which contained provisions on combating piracy also in the territorial sea.

323. Many delegations underlined the importance for States to ratify or accede to UNCLOS and the SUA Convention and its Protocol, as well as the United Nations Convention against Transnational Organized Crime. It was suggested that the Consultative Process could endorse the United Nations General Assembly's call for States that had not done so to consider adhering to the SUA Convention and its Protocol and to implement its provisions.

324. Several delegations stated that States should be encouraged to enact and enforce national legislation for effective implementation and enforcement of the above Conventions and that all States should review their national legislation and practice to see if they fully reflected the rights and duties embedded in the Conventions. One delegation suggested that elements of legislation necessary to implement the obligations under the SUA Convention should be identified, following the approach taken for the 1988 United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances.

325. The importance of ensuring that measures by individual States were consistently enforced within the framework of international law was highlighted by several delegations.

326. They underlined the importance of a common understanding of States' enforcement rights under international law. One delegation emphasized that, more than reaching a common understanding on existing rules, there should be a direct reference to and application of such rules.

327. In conclusion, several delegations said that they looked forward to a strong statement in the report of the meeting to the United Nations General Assembly

on the importance of preventing and combating piracy, suggesting measures and decisions that could be reviewed at future meetings of the Consultative Process and by the General Assembly.

Agenda item 4
Exchange of views with the Subcommittee on Oceans and Coastal Areas of the Administrative Committee on Coordination

328. Mr. Patricio Bernal, Executive Secretary of IOC-UNESCO and Chairman of the Subcommittee on Oceans and Coastal Areas (SOCA) of the Administrative Committee on Coordination (ACC), presented an overview of the structure and functions of ACC, an internal body of the United Nations system on coordination, and outlined current activities of SOCA.

329. He pointed out that ACC was undergoing a phase of reviewing its mechanism in order to improve coordination and that, in that respect, SOCA itself was in a period of transition. In that connection, he stressed that while the structure for coordination might undergo changes, the function and goal of coordination in ocean affairs would remain and would be carried out.

330. He informed delegations that at its two most recent meetings, in January and May 2001, SOCA had focused on reporting tasks, in particular with regard to chapter 17 of Agenda 21 and the forthcoming World Summit on Sustainable Development to be held in September 2002. The Subcommittee had also discussed its assistance in the coordination and cooperation in the implementation of the GPA, although for resource-related and practical reasons it had been obliged to relinquish its initial function of a GPA steering committee. Furthermore, SOCA had devoted considerable attention to its new project, the United Nations Atlas of the Oceans, for which it acted as coordinator and manager. That project was aimed at integrating dispersed databases and poorly catalogued information available at the United Nations agencies and presenting the material on a single web site or on a compact disk. Despite management problems, the project, which was partly financed and supported by the United Nations Foundation, was expected to be completed by November 2001.

331. In the ensuing dialogue, a number of delegations made comments and suggestions and asked questions.

332. Delegations recognized the importance of the participation of SOCA in the meetings of the Consultative Process and acknowledged with appreciation information provided by Mr. Bernal. Many of them reiterated that the improvement of inter-agency coordination and cooperation on ocean affairs was one of the main purposes of the Consultative Process.

333. Delegations further noted the importance of ensuring the effectiveness, transparency and responsiveness of SOCA and the need for enhanced cross-sectoral cooperation and coordination, not only at the inter-agency level but also at the intergovernmental level and at the regional level, e.g., between the regional fisheries organizations and UNEP regional seas programmes.

334. Delegations also took note of the ongoing restructuring of the ACC system. In that context, they reiterated the importance of SOCA and unanimously called for the strengthening of its role and for the provision of adequate resources for the Subcommittee. The role of IOC as the SOCA secretariat should be maintained, some delegations suggested.

335. A number of suggestions were made regarding the functions of SOCA. Among the proposed functions were:

- To review ocean-related activities and problems encountered by United Nations agencies and programmes so as to achieve coordination and cooperation and avoid duplication of effort;
- To exercise a strong role with regard to the GPA and the 2002 World Summit for Sustainable Development;
- To coordinate inter-agency responses regarding the sustainable use of living resources and the protection of biological diversity on the high seas;
- To provide advice on subjects before the Consultative Process;
- To enhance coordination among agencies so as to ensure an integrated approach to implementation and financing of programmes;
- To increase the cooperation between agencies and bodies and the World Bank in linking the needs for resources for projects to adequate funding;

- To review budget proposals from various United Nations bodies in order to coordinate responses to needs;
- To provide assistance and coordination with regard to training and technical assistance programmes.

336. In answering questions and responding to comments and suggestions, Mr. Bernal pointed to the difficulties of a practical nature facing SOCA and its secretariat. These included inadequate resources, lack of permanent support staff, technical coordination by SOCA without the executive power to make decisions, rigidity of the administrative and budgetary procedures of the United Nations agencies and bodies, as well as the need to respect their hierarchical structure. Despite those difficulties, he assured delegations of the commitment of the members of SOCA to continued and enhanced cooperation and coordination.

337. Furthermore, during the discussion under agenda item 4, it was suggested that the analytical content of the chapter on international coordination and cooperation in the Secretary-General's report could be enhanced and that the Division for Ocean Affairs and the Law of the Sea could regularly brief delegations in New York on the work of SOCA.

338. With respect to the participation of various parts of the United Nations system in the Consultative Process, delegations once again stressed the importance of the presence of all relevant United Nations organizations and bodies, including funding institutions, such as the World Bank and GEF. It was further suggested that the United Nations Office for Outer Space Affairs should be invited to the meetings of the Process in view of its potential contribution in the field of observation of oceans by satellites.

339. One delegation recalled its plea made at the first meeting of the Consultative Process concerning better coordination among UNDP, UNEP, FAO, IMO and UNESCO through negotiations of memorandums of understanding with respect to particular programmes.

340. During the discussion on Part A of the draft report on the work of the Consultative Process at its second meeting, a number of delegations made additional suggestions. It was proposed, inter alia, that ACC should organize the preparation of a report, identifying the full range of United Nations organizations, agencies, programmes and funds engaged in ocean affairs, their mandates and the relationship between them, including the description of their current activities, and that open briefings on the work of SOCA should be held at United Nations Headquarters. Some other delegations, while concurring with the opinion that there was a need for detailed information on the internal functioning of the United Nations system, considered that the current format of the report of the Secretary-General on oceans and the law of the sea was sufficient to cover that issue. Yet another delegation expressed the opinion that paragraph 42 of General Assembly resolution 55/7 already contained a similar request for a study and that it was for the General Assembly and not for the Consultative Process to consider the need for further reports, taking into account the already sufficiently complex and comprehensive nature of the report of the Secretary-General.

Agenda item 5
Identification of issues for possible consideration at the third meeting of the Consultative Process in 2002

341. Co-chairperson Slade opened the discussion on agenda item 5 with reference to paragraphs 10 (c) and 11 of the format of the second meeting of the Consultative Process. Pursuant to those paragraphs and to the annotated agenda, the second meeting was to discuss additions or amendments to the list in the report of the first meeting (A/55/574, Part C) entitled "Issues for considerations for possible inclusion in the agendas of future meetings". A note on those additions or amendments would then be contained in the draft report of the second meeting and be open for comments during a plenary session.

342. During the ensuing debate, a substantial number of possible issues were put forward by delegations. Among them were the following:

- Capacity-building and regional cooperation;
- Capacity-building for developing States;
- Regional approach in oceans management and development;
- Development and transfer of marine technology;

- Evaluation of the progress achieved under the issues discussed at the first and second meetings of the Consultative Process;
- Marine protected areas;
- Review of the national, regional and global implementation of Part XII of UNCLOS;
- Ecosystem-based integrated management of the marine environment;
- Potential and new uses of the oceans;
- Oceans stewardship;
- Food security and mariculture;
- Cooperation and coordination between regional fisheries organizations and regional seas programmes of UNEP;
- Impact of the activities in the international seabed area as a source of contamination of the marine environment;
- Fishery subsidies and their clear and negative effect on the conservation of marine living resources;
- Marine debris;
- Integration of the applicable legal provisions and programme issues;
- Navigation in ecologically sensitive areas;
- Protection of coastal areas from introduction of non-native species.

343. The suggestions received varying degrees of support; it was felt, however, that priorities should be established by the General Assembly.

344. There was a consensus among delegations that the theme of capacity-building had been recurrent during the first and the second meetings of the Consultative Process. This had resulted in an overwhelming support for its future consideration. Some delegations were of the opinion, however, that the theme of capacity-building was too vast to be considered as a separate issue and suggested focusing the capacity-building item on the needs of developing States.

345. Several delegations expressed the view that areas of focus for the meetings of the Consultative Process should be as concrete as possible. Some of them felt that the theme of capacity-building would necessarily need to be addressed under each specific issue, as had been the case with issues already discussed, and that that element could be reflected, in accordance with the practice of the Consultative Process, in the annexes to the format and annotated agenda which contained issues for consideration.

346. Many delegations supported consideration of the issue of the development and transfer of marine technology. A number of delegations also concurred with the view that the next meeting of the Consultative Process should devote some time to the assessment of achievements in the areas of focus discussed at the first and the second meetings.

347. Regarding oceans stewardship, it was noted that it included assuming responsibility and taking actions for a greater improvement of the marine environment and ensuring the stability of development. It embodied many different activities and initiatives and was the responsibility of all actors of the international community.

348. Many delegations felt that the next meeting of the Consultative Process should also devote time to the review of its effectiveness and utility and recalled that such a review was due, pursuant to General Assembly resolution 54/33, in 2002. Some delegations considered that such self-evaluation would be, for both formal and practical reasons, inappropriate and that, according to the same resolution, that was clearly a prerogative of the General Assembly.

349. Many delegations also deemed that the third meeting of the Consultative Process could make a valid contribution and provide input to the forthcoming World Summit on Sustainable Development, to be held in Johannesburg, South Africa, in September 2002. In that regard, the issues of food security and mariculture were mentioned as deserving particular attention. One delegation pointed out that, since the General Assembly would not be in a position to consider the output from the third meeting in time for the summit, it would not be appropriate to include its consideration in the agenda of the third meeting.

350. In addition, during the general exchange of views, one delegation expressed the hope that future meetings of the Consultative Process would accord high priority to discussions on the management of risks to biodiversity and other components of the marine environment beyond the limits of national jurisdiction.

Part C
Issues for consideration for possible inclusion in the agendas of future meetings

1. There was broad support for including capacity-building and the regional approach in oceans management and development as areas of focus for the third meeting of the Consultative Process.

2. Other suggestions put forward included:

(a) Marine protected areas;

(b) Review of the national, regional and global implementation of Part XII of the United Nations Convention on the Law of the Sea;

(c) Potential and new uses of the oceans;

(d) Development and transfer of marine technology;

(e) Oceans stewardship/ecosystem-based integrated management of the marine environment;

(f) Food security and mariculture;

(g) Cooperation and coordination between regional fisheries organizations and regional seas programmes of the United Nations Environment Programme;

(h) Impact of the activities in the international seabed area as a source of contamination of the marine environment;

(i) Effect of fishery subsidies on the conservation of marine living resources;

(j) Marine debris;

(k) Convergence of the legal and programmatic dimensions of international cooperation;

(l) Navigation in ecologically sensitive areas;

(m) Protection of coastal areas from the introduction of non-native species.

3. Support was expressed for evaluation of the progress achieved under the four areas of focus at the first and the second meetings: "responsible fisheries and illegal, unreported and unregulated fisheries: moving from principles to implementation"; "economic and social impacts of marine pollution and degradation, especially in coastal areas"; "marine science and the development and transfer of marine technology as mutually agreed, including capacity-building"; and "coordination and cooperation in combating piracy and armed robbery at sea".

Annex I

Statement by Mr. Hans Corell, Under-Secretary-General for Legal Affairs, The Legal Counsel

1. On behalf of the Secretary-General, Mr. Nitin Desai, Under-Secretary-General for Economic and Social Affairs, and I would like to welcome you to the 2nd meeting of the United Nations Open-ended Informal Consultative Process established by the General Assembly in its resolution 54/33 in order to facilitate the annual review by the Assembly of developments in ocean affairs. I am pleased to note that, in keeping with the inclusive nature of the Consultative Process, delegations present here today represent States Members of the United Nations, States members of the specialized agencies and parties to the United Nations Convention on the Law of the Sea. They also represent entities that have received a standing invitation to participate as observers in the work of the General Assembly pursuant to its relevant resolutions, intergovernmental organizations as well as major groups as identified in Agenda 21.

2. It is almost two decades since a constitution for the oceans was adopted in the form of the United Nations Convention on the Law of the Sea. It is almost a decade since a programme of action for the world's oceans and seas was adopted in the form of chapter 17 of Agenda 21. Thus, the international norms for the world's oceans and seas are in place. The legal and the programmatic frameworks for effective action in the marine sector are set.

3. The efforts of the international community in the past few years focused on the transition from the establishment of the norms to their implementation. This is a daunting challenge. It is therefore not a mere coincidence that a need was felt for establishing a Consultative Process. At the core of this Process is the attempt to find ways and means to meet the challenges of implementing the law and the programme of action for the world's oceans and seas.

4. The challenges are many and diverse. Developing countries, in particular the least developed countries and small island developing States, are finding their capacity to be limited, their resources scarce and their means of implementation inadequate. International cooperation is therefore essential in building their capacity, in enhancing their resources and in strengthening their means of implementation.

5. International coordination is necessary for identifying and filling the gaps so that weak links in the common effort do not undermine the whole structure of ocean governance. Coordination is also essential for eliminating duplications and overlaps so that the outcomes of a given amount of effort can be maximized.

6. The challenges for developed countries, on the other hand, are of a different nature. The challenges they face emanate from a multiplicity of activities, in many cases carried out in isolation from one another: one sector may have little interaction with another; one discipline may have little interface with another. Once again, coordination and cooperation at the national and international levels become essential so that actions taken will benefit from synergy effects.

7. Above all, there is the need for international coordination and cooperation between developing and developed countries. The conventional dichotomy between the North and the South is literally washed away by the waters of the world's oceans and seas. The political and economic boundaries do not match the ecological boundaries of the oceans, or the boundaries of marine resource occurrence. The marine environment does not distinguish between the North and the South, defined in political terms.

8. "The problems of ocean space are closely interrelated and need to be considered as a whole": this was a fundamental principle for the framers of the present legal regime and also of the programme of action. At the implementation level, this principle takes on immense dimensions. International coordination and cooperation is the most effective means of considering the problems of ocean space as a whole; in fact, it is the only means. The Convention and Agenda 21 themselves prescribe international coordination and cooperation in almost every area. The Convention is hailed as the most comprehensive framework for such coordination and cooperation in ocean affairs.

9. That international coordination and cooperation is beneficial in dealing with ocean issues is easy to see. Let me give you an example of the opposite. In the Secretary-General's report this year on oceans and the law of the sea (A/56/58), the World Meteorological Organization provides an alarming example of the dangers of the lack of international coordination and cooperation. Developing countries are unable to provide sufficient meteorological data and services in the ocean areas within their jurisdiction. Such inability in turn causes a deficiency in the availability of data, products and services in many major ocean areas, especially those required for meteorological forecasting. Such deficiencies can put all maritime users in peril.

10. The main purpose of the Consultative Process is to suggest particular issues to be considered by the General Assembly. The emphasis should be on identifying areas where coordination and cooperation at the intergovernmental and inter-agency levels should be enhanced.

11. The Secretary-General's annual reports on oceans and the law of the sea, in particular the one before you for your consideration and to which I just referred, chronicle a number of persistent problems as well as emerging issues in ocean affairs. Each of these problems calls for international action.

12. In 2000, the Consultative Process identified two areas of focus and suggested ways and means of enhancing international coordination and cooperation. These areas were: responsible fisheries and illegal, unreported and unregulated (IUU) fisheries; and economic and social impacts of marine pollution and degradation, especially in coastal areas. Over-exploitation of fish stocks, damaging fishing equipment and practices, and by-catch and discards compound the problems of irresponsible fisheries. Marine environmental problems are accentuated by the impacts of land-based activities, especially sewage, and effects of dumping and vessel-source pollution. The ocean-atmosphere interaction, through a rise in the sea level and the occurrence of periodic oscillations, is raising concerns about the well-being of present and future generations and highlighting the vulnerability of many coastal States, especially developing States and small island States.

13. This year, the Consultative Process is going to focus on two other areas: marine science and technology; and combating piracy and armed robbery at sea.

14. The unhampered conduct of marine scientific research, a better understanding of oceans and also of their interaction with the Earth and the atmosphere, a more effective interface between scientific knowledge and decision-making, the development and transfer of marine technology, and the strengthening of marine science and technology capacity: these are issues that urgently call for international coordination and cooperation. The international community will be looking to the Consultative Process for concrete measures.

15. Piracy and armed robbery threaten the shipping industry and endanger the well-being of seafarers. Other crimes at sea, such as the illicit traffic in drugs, smuggling of migrants and stowaways continue to rise. Parallel to these developments, the globalization of trade and the shipping industry brings newer issues to the fore: open registry of ships and flags of convenience and global labour markets for seafarers. The ageing shipping industry gives rise to the problems of safety and of environment-friendly decommissioning of a large number of ships. Global responses are required to address these problems of the global industry. International coordination and cooperation in formulating and executing those responses is essential.

16. As the Head of the Department of the United Nations devoted to the promotion of the rule of law in international affairs, I would like to conclude by emphasizing two points.

17. First, problems of implementation in many cases may lead to the undercutting of the very norms of the rule of law. Such is the case with the field of marine science and technology, where the discrepancy between the norm and the implementation is so glaring that many fear the norm itself will be relegated merely to "an empty shell". Such is also the case with the field of fisheries and shipping, where the balance among the rights and duties of coastal States and those of flag States and of other States achieved in the Convention may be in jeopardy.

18. Secondly, while the general norms are in place, in the formulation of norms in specific areas, international coordination and cooperation is becoming imperative. This is not only to ensure that norms that have been developed or are under development in a wide variety

of areas relating to oceans are complementary to one another, but also to safeguard that such norms conform to the unifying and coordinating framework of the Convention. Currently, my Department, in particular through its Division for Ocean Affairs and the Law of the Sea, is fostering international coordination and cooperation by providing advice and assistance in the development of legal regimes in conformity with the Convention in the specific fields of, for example, underwater cultural heritage, marine protected areas and marine genetic resources.

19. Within the United Nations Secretariat, we endeavour to achieve an efficient interdepartmental coordination and cooperation, especially between the Office of Legal Affairs and the Department of Economic and Social Affairs. The idea is to integrate the legal aspects of ocean affairs and the programmatic aspects of an economic and social nature. The servicing of the Consultative Process, as mandated by the General Assembly in resolution 54/33, is a cooperative endeavour between the two departments.

20. The inter-agency coordination and cooperation among the funds, programmes and organizations of the United Nations system is achieved essentially by two means: through direct communications, contacts and liaison among the various entities themselves; and through the system-wide inter-agency coordination and cooperation mechanism of the Subcommittee on Oceans and Coastal Areas of the Administrative Committee on Coordination. The report of the Secretary-General before you (A/56/58), exemplifies inter-agency coordination and cooperation in that it incorporates the contributions of relevant agencies within the coordinating framework of the United Nations Convention on the Law of the Sea and Agenda 21.

21. I am confident that the Co-Chairpersons will navigate the Consultative Process so that it can meet effectively the challenges of transition from establishing the required norms to their implementation. At the same time, the Process must stave off the centrifugal forces that may lead us away from the existing rule of law. I wish the 2nd meeting of the Consultative Process all success.

Annex II

Statement by Mr. Nitin Desai, Under-Secretary-General for Economic and Social Affairs

1. It is a pleasure for me to join my colleague, Mr. Hans Corell, at the opening of this second session of the informal consultative process. The fact that the two of us are here together reflects the intentions behind this Informal Consultative Process, which is to bring together the legal dimension and the programmatic dimension of international cooperation on matters relating to the oceans.

2. As my colleague, Mr. Corell, emphasized, partly this objective is based on the growing recognition that the establishment of norms has to be accompanied by a systematic effort at cooperation in implementation. And once one gets into issues of implementation, then one has to get into substantive programmatic areas such as fisheries, marine pollution, ocean science, coastal zone management, regional seas and so on. And that was the motivation that led to the five-year review process of the Rio Conference and then to the proposal of the Commission on Sustainable Development contained in its decision 7/1, that the Consultative Process could and should be set up.

3. The proposal was finally endorsed when the recommendations of the Commission on Sustainable Development at its seventh session on oceans and seas were discussed by the General Assembly in 1999 and, as you know, the consultative process was launched. In many ways it is an experiment. It was scheduled to work for three years, and next year when you meet for the third time you will also have to review your experiences with the Consultative Process so that decisions can be taken on its future and how we continue to see best reflected the type of integration of the legal and the programmatic dimension that is required.

4. Let me also underline another point which my colleague, Mr. Corell, made. The ocean is the one area where the case for international cooperation is absolutely clear. As he emphasized, ecosystems do not know political boundaries, and this is even more so in the case of the oceans, where a very substantial part of what we are talking about lies beyond national jurisdiction. And that is why for so many reasons the development of a legal regime specifying the rights and obligations of States has probably moved further in this area than in almost any other area involving natural resources.

5. Let me also stress that it is not just a matter of the physical characteristics of the ocean itself. If you look — and I now speak as a social scientist, as an economist and as an historian — it is also the fact that economic zones are defined as much by the ocean as by land. I come from Western India, in Gujarat. And I can tell you that my part of India has had historically a stronger connection with the littoral States of the Indian Ocean in Arabia than maybe with other parts of India. After all, it was the Indian Ocean that defined the economic zones of the area. This has been true for the South China Sea, the Mediterranean and the Pacific Rim. So economic zones have been defined very much by the interaction of nations across oceans. And the great historian Fernand Braudel said that even civilizations are defined by the sea that they are surrounded by, when he wrote about the Mediterranean.

6. So, I would say that for historical reasons, for economic reasons, besides ecological reasons, the reality is that the nations of the world share a common interest in the oceans. In terms of economic resources, the way the ocean affects all territories and the management of pollution, it is understandable that the issue of oceans figured very prominently in the 1992 Rio Conference.

7. In fact, chapter 17 of Agenda 21 is perhaps still the only place where we have an integrated programme on oceans involving almost every aspect: fisheries, pollution, coastal zone management, scientific research, coordination and cooperation. And that chapter has provided a very useful way of bringing together the different parts of the work of the United Nations system on ocean affairs, at the Secretariat, inter-agency and intergovernmental levels.

8. At the Secretariat level, one of the important products of the Rio Conference was the establishment of the ACC Subcommittee on Oceans and Coastal Areas (SOCA), the inter-agency coordination process on oceans. This is something whose need had been felt for a long time and in many ways was a catalyst for this unified chapter 17 on oceans, which forms part of

Agenda 21. And it was based on the earlier decisions that we are addressing in the follow-up of the Rio Conference. The very fact that the area reserved here in this room for the agencies to sit is almost as crowded as the one for the delegates is a reflection of the widespread interest in ocean affairs in the United Nations system. SOCA has been an important instrument in bringing all of these agencies and organizations together.

9. The primary focus of coordination is, of course, on exchanging information and launching joint programmes and initiatives, such as the United Nations Atlas of the Oceans. The basis of this hard work has been provided by the legislative process and now, since last year, by this Consultative Process that you have launched.

10. Some questions have been raised with regard to the future of SOCA in the context of the discussions that are going on in relation to ACC reforms. I would like to assure you that the focus of ACC reform is more in terms of ACC itself and not on the basis of the needs of its own work. It has been recognized that the arrangements which are in place at the working level, particularly in order to strengthen cooperation and coordination among agencies and organizations, have to be justified in terms of their own objectives and concerns, which are not all related to servicing ACC. A significant part of SOCA's concern is to be of service to the Consultative Process on oceans. Part of its concern is to ensure cooperation and coordination among agencies in terms of programmatic work. And therefore I would say that it has been recognized that these bodies will continue in a form that will be defined by their purpose. As of now, what ACC has asked is that each inter-agency process examine its objectives, its purposes and define its own rationale and its own method of work, which, besides supporting ACC, involve many other dimensions of cooperation and coordination that are relevant. I would assure you that I personally, particularly as the Head of the Department of Economic and Social Affairs, and within it the Commission on Sustainable Development, place a very high value on the mechanisms of coordination that have been established through SOCA.

11. The first specific issue before you at the current session deals with marine science. This work has been traditionally coordinated through the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP). I have before me GESAMP's latest report entitled "A Sea of Troubles". At first glance, it shows what valuable work GESAMP has been doing. I am aware that there are many questions and issues that have been raised with regard to the adequacy of the efforts for cooperation in marine science and research. And I am sure that this is something that you will discuss. This is clearly one of the key areas that we need to strengthen. If we look at what we know about the oceans, we find that it is far, far less than what we know about the land. And we are increasingly aware of the fact that much of what we are talking of in terms of issues — global environment issues — have a strong connection with oceans.

12. My colleague, Mr. Corell, alluded to the most important example of this: the global climate system. It is increasingly clear that much of our understanding of global change depends strongly on the atmosphere/ocean interaction, of which, frankly, we know very little — and much more research is required. But this is not the only area of research. There are key areas of research regarding biomass in the oceans. In view of the amount of biomass connected with the oceans in one way or another and how it has been threatened, as shown in the GESAMP report, I would say again that it remains a very important area of concern. An example of this of course is the coral reef initiative, but that is not the only one.

13. The area of fisheries has of course been traditionally of great importance in the context of ocean affairs. That too is an area where the strengthening of research and understanding is crucial because much of international cooperation depends on scientific assessments of what is happening to fish stocks, which ultimately depends on information, research and analysis.

14. The area that you are tackling today is absolutely central to the mechanisms of international cooperation. It is also an area where the agencies and organizations of the United Nations system have a strong interest and involvement in capacity-building. In fact, it is an important part of the work of the United Nations in relation to oceans. We look forward to seeing what your recommendations and suggestions will be in this area. I do not really have much to say on the second issue of your agenda: robbery and piracy on the seas. It is a legal issue and I really do not have much to add or contribute in that area.

15. Let me turn finally to the connection with the Johannesburg Summit on Sustainable Development, the 10-year review of the Rio Conference, which will take place in September of 2002. We just completed the first preparatory meeting for the Johannesburg Summit, a very successful one, which has basically mandated a flexible process with a lot of interaction with civil society, major groups, stakeholders, in the Conference itself and in the preparation for the Conference. The focus of the Conference will be on trying to operationalize sustainable development. It will also focus a great deal of attention on the impact of issues and trends of globalization, risk management issues, finance for sustainable development, technology transfer and, I believe, also in reasserting, reinforcing and reinvigorating the sense of responsibility for environmental and sustainable development at the global level. The issue of the oceans is very central to this focus. I would certainly invite this Consultative Process to consider how it can best contribute to the consideration of this issue at the World Summit on Sustainable Development in September 2002.

16. The main preparatory process will begin in January 2002. A second preparatory meeting will be held in March 2002. A major Ministerial Preparatory Meeting, which will look at what will be done at Johannesburg, will take place in Indonesia, possibly on the island of Bali, in late May in 2002, and then we will go on to the World Summit in September 2002 in Johannesburg. In the first six months of this year the focus of the preparations has been on thematic round tables, regional round tables, creating a number of activities, on a very decentralized basis, which would all be brought together at the first preparatory meeting, which would be held in New York in January 2002. I mention this timetable so that you, as a Process, and individually, working through your national preparatory processes, would find ways of contributing to this exercise.

17. I spoke of responsibility. Let me just conclude with something a little more philosophical if I might. Very close to Johannesburg there is a site called "the cradle of humanity". It is a world heritage site, where the oldest known fossils of hominids have been found. They are between 3 and 1/2 and 4 million years old. I hope that in some way we can connect what we are going to talk about in Johannesburg to that site. I mention this because in some ways the ocean is an even earlier cradle of humanity. Without the ocean we cannot sustain life on Earth. There are many ways in which oceans are absolutely central to the evolution of humanity. Therefore, the ocean is an issue that is central to the *problématique* of sustainable development. I look forward to your deliberations not only at the current session but also next year and to the contributions you can make to reinvigorate and reinforce sustainable development in Johannesburg next year.